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The OIL AND GAS JOURNAL

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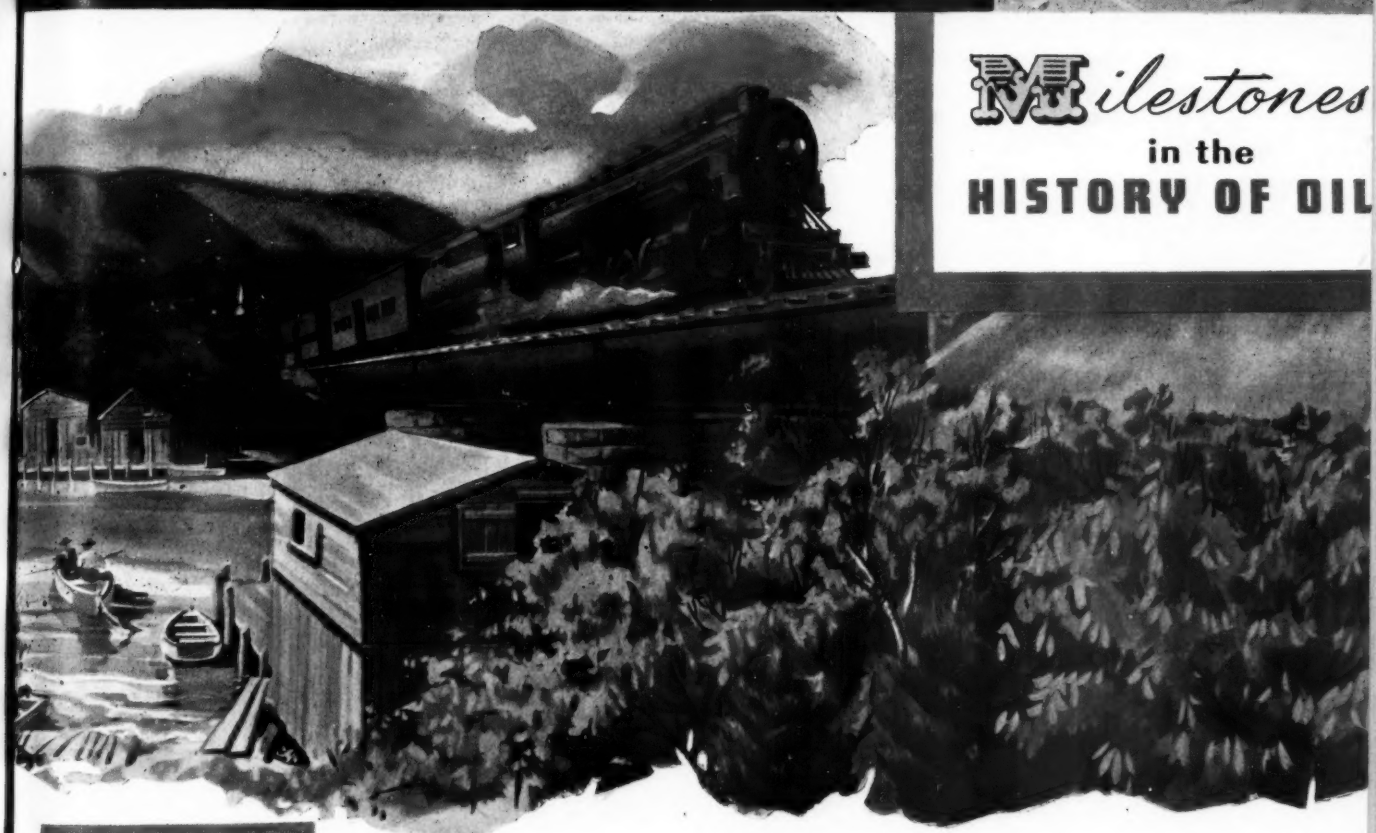

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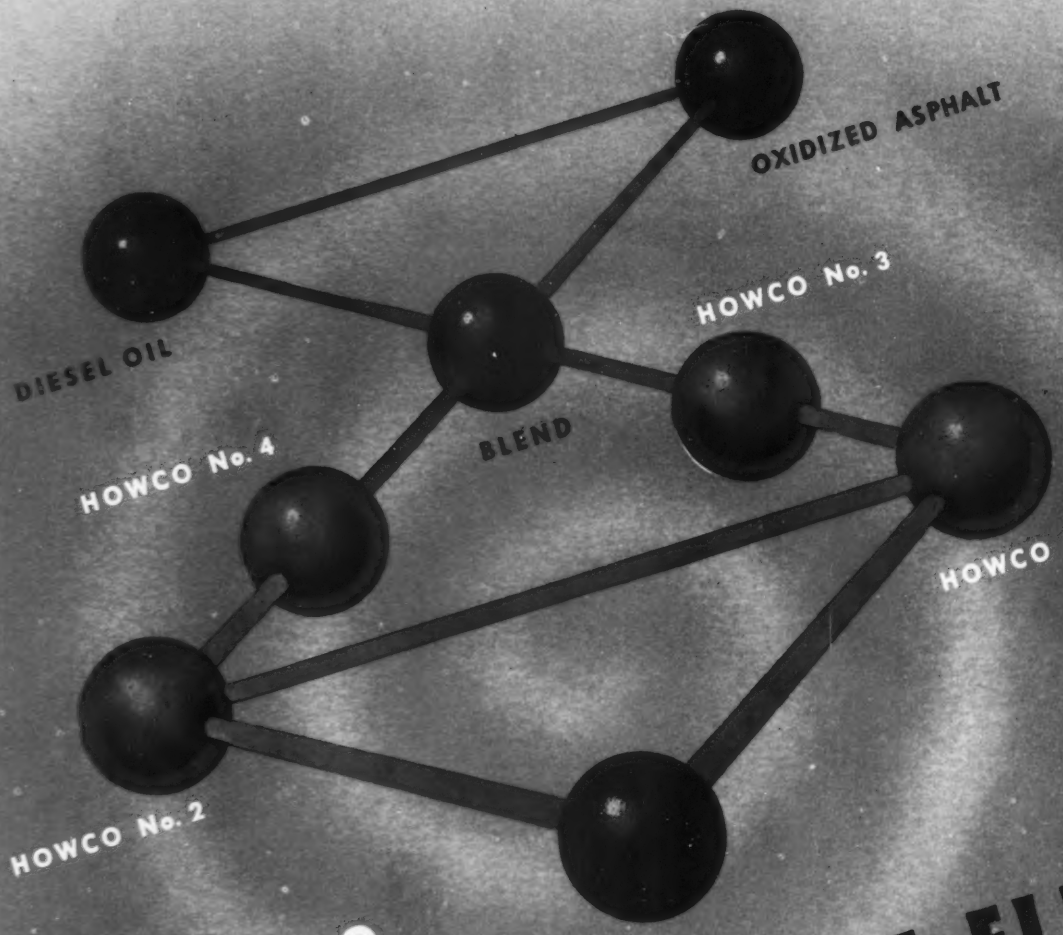

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THE OIL AND GAS JOURNAL

Government Competition

THERE are many in this industry who are not concerned with the pending Senate and House bills having to do with the oil and gas development of our public lands. They do not operate public-domain properties and never expect to—so why worry about somebody else's business?

A study of the recent testimony at hearings should be enlightening to those who have failed to realize that the policies adopted in public-domain development over the next several years will have a direct bearing on all petroleum activities. A substantial percentage of probable oil land in this country is now owned by some department of the federal Government.

There are those, despite their official position to the contrary, who favor government operation of all petroleum found on government-owned lands. They point to what has been done in the generation of electricity with power dams on streams. They contend that only through government ownership can the oil reserves of these lands be developed in the public interest.

The methods used by proponents of government operation are indirect. They know that the Congress is in no mood now to listen to a program of wasting additional funds in exploration and exploitation. But they seek to accomplish their ends by making it impossible for private operators to determine the oil possibilities of these lands.

The inference is clear. If private operators are unable to accept the proposed regulations, then the Government on one pretext or another can step into the gap with its own plans. Rights of states will be ignored. What has happened in the power field will be duplicated in petroleum. Operators will wake up to find that the Government itself is its largest competitor. Using public funds without regard to returns—the bulwark of Government in business—public ownership would establish operating standards for all.

The program of the oil industry has been explained many times. In brief producers propose to operate on public lands just as they do on private lands subject to those differences which would naturally evolve from the fact that leases would usually be in large tracts and remote in most instances from the major markets.

What is wrong with this plan and why should operators in presenting it at Washington be on the defensive? What is there in the peacetime and emergency record of the oil industry that would justify standards for the operation of oil on public domain differing from those activities of the past and present which have supplied all demands for an essential commodity at low prices? The proponents of government ownership and unwarranted controls have no answer for these questions. The oil business generally must see that this fact is recognized by bewildered law makers who have too many immediate problems on their doorsteps to give thought to long-range issues.

Texas Production to Reach All-Time High in June

by Dahl M. Duff

THE Texas Railroad Commission Tuesday set June crude allowable some 179,000 bbl. daily over current production in the nation's major producing state.

The allowable will raise Texas crude production to a new all-time high. Previous record production in Texas was reached in August 1945, when the state produced 2,222,700 bbl. daily.

The order fixing the June production came four days after the statewide market demand hearing in Austin in which independent producers sought an unchanged allowable and refiners asked substantial increases.

The state's total June allowable was set at 2,425,013 bbl. daily. With an estimated underproduction of 5.44 per cent—or 131,921 bbl. daily—the order will permit production of 2,293,092 bbl. daily. This compares to 2,114,800 bbl. daily in the week ended May 18. June nominations totaled 2,439,000 bbl. daily.

The commission's order raises June production 243,000 bbl. daily over the 2,050,000-bbl. estimate of the United States Bureau of Mines. In addition, the state will produce 170,673 bbl. of natural gasoline and distillate during June.

East Texas field production was cut back to 330,396 bbl. daily, a reduction of 62,550 bbl. daily from the May rate. This action was taken in view of a 4.5 psi. drop in bottomhole pressure which E. O. Thompson, commission member, termed a "danger mark."

Elsewhere in the state, production was raised to what Thompson said is the maximum efficient rate of production. The June allowable increase places Texas production above its wartime rate a year ago. American Petroleum Institute figures list Texas production for the week ended May 12, 1945, at 2,176,150 bbl. daily.

Explaining the commission's action, Thompson reviewed the commission's function in preventing physical waste and at the same time meeting market demand. He pointed out testimony at the hearing showed many refiners are running short of crude, that the market demand is firm, and that stocks are insufficient.

He said the commission's survey showed 102,000,000 bbl. of Texas crude in storage, of which 53,000,000 bbl. is in tank bottoms, pipe lines, etc. It appears, he added, that the remainder is insufficient as working stocks for refineries. "For the first time," he said, "current consumption must be met by current production."

The commission decided to defer action on issuance as a 90-day production allowable which had been proposed at the market demand meeting by H. J. Porter, Houston. June 18 was set as the date for the July market demand hearing, and Thompson said question of a 60 or a 90-day order will be considered then.

Effort Being Made to Vitalize Oil and Gas Division

by Henry D. Ralph

WASHINGTON.—Government officials this week were seeking funds, clearance for the industry advisory committee, and personnel to vitalize the new Oil and Gas Division in the Department of Interior.

The division was established by order of President Truman 2 weeks ago, but thus far it is largely a paper organization. Ralph K. Davies, acting director, now has only a small amount of money and a few individuals inherited from the dissolved Petroleum Administration for War.

Activity of Davies and other officials, however, indicates the organization problems will be pressed to an early solution. As for the advisory council, the acting director has submitted to the Department of Justice the outline of a letter inviting some 70 prominent oil industry executives to serve on the group.

Davies is asking satisfactory assurance from the Department of Justice's antitrust division that the council will be allowed to function without interference. He wants a clear-cut statement from the Justice Department in the "clearance" letter, and the department's attorneys were giving slow and deliberate study to the question.

Meanwhile Davies has been drawing up a list of names to receive invitations. He started with the last roster of the Petroleum Industry War Council and deleted all company duplications so that no company will have more than one representative on the new body. Then he dropped off all those who, for one reason or another, had not been very active or helpful in PIWC.

Now he is adding names of others who have been particularly active in the oil and gas industry, who have constructive ideas, and who are likely to attend meetings when asked. His final selections will be on the basis of an equitable geographical representation and a rather heavy weighting on the side of the independent operators and small companies.

When he finishes, Davies expects to have a council about the size of PIWC—70 members or perhaps a few more. Later there will be subcommittees with even wider representation.

As for immediate organization, first problems of the division are funds and top personnel. The Bureau of the Budget is now working on an estimate for the division, and a request for an appropriation will go to Congress in the near future.

Davies is actively searching for able men for the top posts in the organization. He is welcoming suggestions of likely candidates. As soon as he can get several of the key posts filled, Davies himself is due to step out and leave the remaining details to this group.

To date the Petroleum Conservation Division of the department is still a separate entity. This was created by Executive Order of December 1, 1937, to carry out the president's powers to prevent interstate shipment of "hot oil," as provided in the Connally Act. As soon as the OGD gets functioning, the president will issue a new order giving it jurisdiction over the Connally Act, and the Conservation Division will then be merged with OGD. The entire set-up is expected to be completed not later than the beginning of the government's new fiscal year, July 1.

U. S. Sells First Catalytic-Cracking Plant Since War

WASHINGTON.—Utah Oil Refining Co. has purchased from War Assets Administration the government-owned catalytic-cracking plant at Salt Lake City which it leased and operated during the war.

Price agreed on is $4,148,300. This is the first government-owned cracker sold since the war.

New officers of the Southwestern district, A.P.I. Division of Production: (Seated) N. N. Jones, Humble Oil & Refining Co., vice chairman for East Texas; W. E. Winn, Sun Oil Co., retiring district chairman and new chairman of the advisory committee; W. V. Vietti, The Texas Co., district chairman; B. J. Dowd, Union Producing Co., vice chairman for North Louisiana and Arkansas. (Standing) R. A. Seale, The Globe Supply Co., secretary-treasurer; B. C. Craft, Louisiana State University, vice chairman for South Louisiana; R. E. Bridges, Humble Oil & Refining Co., vice chairman for Texas Gulf Coast. Not shown are: Ed Warren, Carl B. King Drilling Co., vice chairman for West Texas and New Mexico; Jo Cable, Cable Drilling Co., vice chairman for North Texas, and A. M. Crowell, Mississippi Oil and Gas Engineering Committee, vice chairman for Alabama-Mississippi

Drilling, Condensate Production Feature A.P.I. Shreveport Meet

by George Weber

SHREVEPORT.—High-pressure gas-condensate production and drilling problems were the principal topics covered as members of the Southwestern district of the American Petroleum Institute's Division of Production met at the 18th annual spring meeting here May 17 and 18. Heavy attendance from throughout the district brought the registration total to 555.

The first morning was occupied with registration and committee meetings. Six topical committees met and outlined work for the coming year covering secondary-recovery methods, drilling practice, production technology, materials, production practice and core analysis, and well logging. Since travel restrictions had limited the meeting of these committees during the latter period of the war, their actions were limited generally to a review of current problems and programs for meeting them.

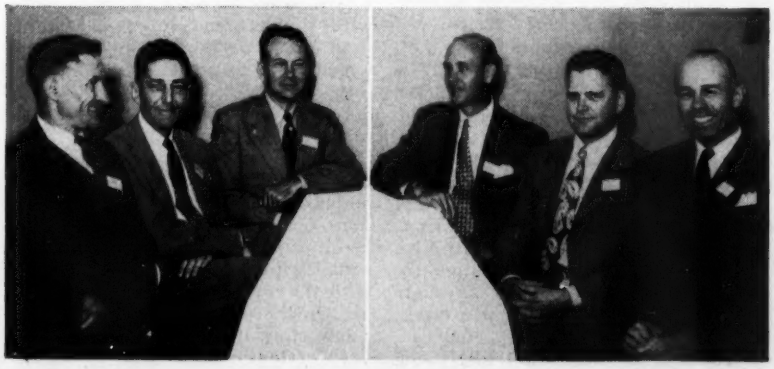
Joseph L. McHugh, commissioner of Louisiana's Department of Conservation, cited the increasing importance of natural gas in the state's economy and outlined the policy of cooperation to which his department is committed in the conservation of casinghead and high pressure gas reserves in Louisiana. He reported that 52 per cent of the state's casinghead gas was utilized during 1945, and predicted that in the very near future the percentage of such gas fully utilized would approximate 80 per cent. He ventured the opinion that most of the future reserves to be discovered in the state at depths exceeding 10,000 ft. would be of gas-condensate type, and repeated the department's progressive stand in promoting unitization and cycling of such reserves for maximum recovery.

E. DeGolyer of Dallas concluded the session with a comprehensive review of oil discovery and production in the United States. An abridged version of this review follows this report of the meeting.

The second day of the meeting was devoted to two technical sessions and election of officers for the coming year. During the morning session, the report of the nominating committee was made by W. S. Morris, East Texas Salt Water Disposal Co., and officers for 1946-47 were elected (see cut). W. V. Vietti, The Texas Co., was named district chairman, and a new vice chairman for Alabama-Mississippi was added to the list.

Gas-condensate production, cycling operations, and secondary recovery were considered in the morning session. Laboratory studies of condensate reservoir behavior were reviewed by J. Paul Sloan, Gulf Oil Corp. In the most comprehensive study yet presented on the subject before any group, he outlined the types of laboratory equipment employed, and described the variable-volume equilibrium cell, the technique of its use, and the limitations and qualifications of laboratory work in duplicating actual reservoir conditions.

"Corrosion of High-Pressure Equipment" by Frank S. West of West & Cole and presented in his absence by T. S. Bacon, Lone Star Production Co., brought up to date the cooperative studies of three association committees. A survey of gas-condensate fields revealed that in March 1946, 47 out of 62 fields reported, were corrosive, an alarming increase over previous surveys. The corrosion problem is estimated to have cost operators $400,000 in damaged equipment in one field alone, and its effect in precluding dual completions will make



The program committee was composed of the chairmen of six topical committees in the district. Members, and the committees they headed, are: G. H. Fancher, University of Texas, secondary-recovery methods; C. A. Warner, Houston Oil Co. of Texas, drilling practice; W. W. Scott, Atlantic Refining Co., production technology; W. F. Rogers, Gulf Oil Corp., materials; M. L. Euwer, Union Sulphur Co., production practice, and Jack P. Hays, Magnolia Petroleum Co., core analysis and well logging

it the governing factor in the economics of an increasing number of prospective cycling projects in the future. In meeting this very serious problem, the author deplored the lack of interest shown by some operators and equipment manufacturers and called for more concerted action on the part of all concerned.

"The Design and Construction of Compressor Plants," a discussion of equipment specifications for secondary-recovery projects, was presented by Dr. G. H. Fancher of University of Texas in the absence of the author, Paul D. Torrey, of Sloan & Zook. The paper reviewed all phases of compressor equipment and plant construction and operation.

Interest Shown in Drilling Session

The discussion and questions which followed the three papers on drilling and completion, presented at the final session Saturday afternoon, revealed the active interest of operators in oil-base muds, oil-well cementing, and high-pressure drilling. R. W. Stuart, Stanolind Oil & Gas Co., reported on the use of oil-base mud at Elk Hills Naval Petroleum Reserve No. 1. (This paper is published on page 128 of this issue).

A lengthy discussion followed the paper entitled "An Investigation of Oil Well Cementing." In their paper, A. J. Teplitz, Gulf Research and Development Co., and W. E. Hassebroek, Halliburton Oil Well Cementing Co., discussed new approaches in the study of the subject, citing several specific cases. Deviations from normal practice and new conceptions of the physical changes occurring underground during the squeezing process were considered in the prepared paper and the ensuing discussion.

The final paper of the meeting concerned the problems encountered in drilling abnormal pressure formations on the Gulf Coast. (This paper also is presented on page 120).

Elected as members of the advisory committee were the following: W. E. Winn, chairman; W. A. Alexander, L. E. Barrows, Al Buchanan, George H. Card, D. V. Carter, M. G. Cheney, A. J. Cunningham, David L. Frame, J. J. Frommer.

R. O. Garrett, J. L. Hamon, J. E. Howell, E. P. Hubbard, A. G. Levy, L. M. Moffitt, W. S. Morris, P. C. Murphy, Bryan W. Payne.

E. L. Rawlins, Gordon Richmond, J. A. Ritter, A. H. Rowan, E. H. Salrin, Bert Schwarz, Fred Shield, C. G. Staley, L. A. Sunkel, I. W. Alcorn, and Joe Zeppa.

The meeting concluded with a barbecue given by 28 service and supply companies at the 40 and 8 Club on Cross Lake.

DeGolyer Recounts Conditions of Operating in Foreign Countries

E DeGOLYER, well-known geologist, summarized conditions likely to be encountered by American oil men operating in foreign countries when he spoke at the spring meeting of the Southwestern District, Division of Production, American Petroleum Institute, in Shreveport last week.

An abridged account of DeGolyer's discussion follows:

"American companies are substantial and successful operators in foreign fields. According to a recent statement by Senator O'Mahoney, 15 United States oil groups now own or have a share in the ownership of crude oil reserves in 20 foreign countries. Except for a handful of independents who hang on in Mexico and an occasional independent in Venezuela, Colombia, and Peru, foreign operations by Americans are strictly big-company operations. This is understandable. Foreign operations are generally slow and expensive. They involve difficulties beyond those common to domestic operations. Even markets, so simple at home as to present no substantial problem, may, in case of successful foreign operations, involve the construction of pipe lines and even refineries. Supplies (even food), equipment, workmen, management — most of these may have to be imported.

"On the other hand, independents and small companies in numbers were successful operators in Mexico and are successful elsewhere in fewer numbers. There is at present a tendency for increasing numbers of smaller companies to operate in foreign areas and there is no reason why individuals or smaller companies, individually or in groups, should not engage in foreign operations.

"In introducing a sketch of some of the differences — and differences to most of us are too often difficulties —I should warn you and urge you to study political conditions and the people of the country which you propose to enter. You must weigh the political risk. Consider the stability of government, economic conditions, legal concepts, and reckon with increasing tendencies toward nationalization. Consider alliances, foreign alignments and outside pressures. Most of all, consider the people of the country. If you do not like them and if you cannot get along under their institutions as they exist, you had better stay out of the country.

In most foreign areas the subsoil pertains in some form or other to the state. The taking of leases—concessions, they are generally called—under such conditions is generally by either of two distinct procedures, both as to time and place.

"In some areas the nation either has no mining law adequate to govern petroleum grants or has no adequate petroleum law, in which case any grant of oil rights has to be negotiated with the heads of government and ratified by its legislative bodies. Such procedure is in effect a tailormade job and is given validity by such legislative procedure as is required for any law. Under such conditions there is almost no limit to the type of concession which may be framed, but even here the operator will be well advised to keep his concession as equitable as possible and not to stray too far from the patterns set by experience elsewhere. A variant of this type of tenure is where there is existing law which sets some limit to the type of concession which may be granted or where the general terms are rigidly defined by law and there are only one or two variables such as bonus or amount of royalty. Such loose conditions as have been described are generally an evidence of political immaturity of the state subject to them and the net result is generally blanket concessions of tremendous size; concessions which are monopolistic in character and which grant areas greater than necessary for the proposed operations.

"The other and far more rational type of procedure is that of nations, far too few in number, with adequate mining or petroleum laws which provide for grants of adequate size through some fixed and limited type of procedure.

"It should be emphasized at this point that in many countries, and almost entirely in Latin American countries, you will be living under code law and that equity and common law, such as you are accustomed to, does not exist.

"It cannot be emphasized too strongly that an American going into a foreign country goes in on a parity with the nationals of that country; that his redress for any injustice which he may suffer is through the courts of the country. One eminent authority states it even more strongly:

" 'In general, a person who voluntarily enters the territory of a state not his own must accept the institutions of that state as he finds them. He is not even entitled to demand equality of treatment in all respects with the citizen of the state.

" 'On the other hand, if a state has a low standard of justice towards its

(Continued on page 112)

THIS 1946 S M T W T F S WEEK

PERSONNEL—Fred B. Koontz made president of Mid-Continent Petroleum Corp. . . . Succeeds Jacob France who will head the board of directors. . . . ¶Several key figures in Hanlon organization named to posts in Warren Petroleum with closing of purchase of Hanlon by Warren. . . . J. H. Boyle and Ray E. Miller made vice presidents in Warren. . . .

INTERNATIONAL—Argentina negotiating to buy 2,800,000 bbl. of Middle East oil from Arabian American Oil. . . . Crude said to represent first such shipment to South America. . . . ¶Impasse reported in discussions in Mexico City on fixing compensation to Great Britain and the Netherlands for 1938 expropriation. . . . Commission adjourns indefinitely after British-Dutch representative rejects Mexican counterclaims. . . . ¶Company and union representatives in Venezuela discuss workers' demands for wage hikes and other benefits. . . . Wage increases sought said to range up to 150 per cent. . . .

REFINING—Utah Oil Refining buys catalytic-cracking plant in Salt Lake City from War Assets Administration. . . . Pays $4,148,300 in first government catalytic-cracker sale since the war. . . . ¶Octane-limitation order clearing CPA legal channels. . . . Top octane for premium to be 78.5. . . . Limitation on housebrand still under study. . . . ¶No increase likely in June lead allocation. . . . ¶Indiana Standard discloses plans to close Neodesha, Kans., and Greybull, Wyo., refineries in 2-2 1/2 years. . . . Says installation of catalytic cracking at plants uneconomic. . . .

PRICES—OPA contentions that coal emergency makes necessary delay in oil decontrol ridiculed in letter to Senate committee by Russell Brown, I.P.A.A. representative. . . . Brown quotes 1943 report showing 35-cent crude increase would cause infinitesimal rise of 58/1,000 of 1 per cent in cost of living index. . . . ¶Unless forced earlier by Congress, OPA planning oil decontrol before autumn. . . . ¶Lubricants advisory committee asks decontrol in recommendations to OPA. . . . Suggests some lube prices now out of line would be adjusted but considers no drastic runaway increases likely. . . .

MEETINGS—Drilling problems, gas-condensate production feature A.P.I. production meeting in Shreveport. . . . W. V. Vietti chosen district chairman. . . . ¶Stripper groups meet in Tulsa to map drive for permanent conservation payment. . . . Texas A. & M. College drilling fluids conference attracts 160 representatives from 10 states. . . . ¶Engineers and scientists of Indiana Standard and subsidiaries exchange technical information in company meeting at Edgewater Park, Miss. . . .

REGULATION—New Oil and Gas Division still in process of organization. . . . Davies seeking antitrust clearance from Department of Justice on formation of advisory council of 70 or more members. . . . Budget Bureau preparing division's fund estimates. . . . Davies hunts top industry men for executive posts. . . . President Truman transfers to Interior Department jurisdiction over leases on Department of Agriculture lands. . . . Move short-circuits Congress which has been studying legislation on problem several years. . . .

PRODUCTION—Texas Railroad Commission sets June allowable at 2,293,000 bbl. daily, 179,000 bbl. daily over current production. . . . ¶Kansas Corporation Commission sets rehearing May 27 on controversial spacing order. . . . ¶Automobile industry produces 152,206 units in April. . . . Future production outlook gloomy in view of coal strike. . . . ¶U. S. crude production in week ended May 18 at 4,758,150 bbl. daily. . . . Up 14,210 bbl. from previous week.

For the development of this weapon and its jellied gasoline fuel, Standard Oil Development Co. and eight of its scientists and engineers recently received awards from the Navy in ceremonies at the Standard Oil laboratories in Bayway, N. J. Here is a precombat test of the Navy's Mark I flame thrower pouring a burst onto a target nearly 150 yd. distant. The weapon was widely used in the Pacific. The Navy presented its Ordnance Development Award to the Standard Oil central technical and research company, and Certificates for Exceptional Service to Dr. Robert P. Russell, development company president, and N. F. Myers, H. G. M. Fischer, M. D. Haworth, S. D. Hulse, J. O. Collins, G. W. Engisch, and R. L. Betts

International

WORLD-WIDE OIL DEVELOPMENTS

Creole to Exploit New Concessions Promptly

NEW YORK. — By wildcatting and stepout drilling in Creole Petroleum Corp.'s Venezuelan exploitation concessions, this company expects to find most of its new oil during the next year, according to the May 10 report of A. T. Proudfit, Creole president, to stockholders.

On the other hand, Proudfit said, "we will pursue vigorously the search for oil in our new exploration concessions acquired in 1944 and early 1945." These concessions total 1,185,970 acres, with the largest holding in the state of Guarico in Central Venezuela where Creole has two blocks totaling 784,290 acres. The exploration period on these runs to November 1947.

The second area is in Lake Maracaibo where the company has 296,525 acres with the exploration period running out January 1948. The third is 105,155 acres in the state of Monagas in Eastern Venezuela, north of the Jusepin field. The company has until April 1948 to select exploitation parcels here.

In all three of these areas geological exploration wells are being drilled, Proudfit explained, for structural control to permit the selection of strategic locations for deep wildcat wells. Three rigs will drill 11 locations in Lake Maracaibo; four rigs will drill approximately 12 exploratory holes in Guarico; and two rigs will drill five holes in Monagas.

Three Deep Tests Working

In addition, three seismograph parties, two gravity meter crews and two geological crews are working in Guarico, with one gravity meter party in Monagas and one underwater gravity meter party in Lake Maracaibo. Three rigs are drilling deep wildcat tests in Eastern Venezuela. Two are working in the Greater Jusepin area, and the other is drilling south of the Quiriquire field.

In refering to Jusepin and efforts to get production from the deeper sands of the northeast Jusepin extension, Proudfit said that the eastern extension of these deeper sands, as indicated by the drilling of three more wells, are blocked off by a fault. Thus far, the company has not been successful, but another well will be drilled sometime this year.

Explaining that Creole has two other exploration areas which enjoy a special status, the president said they were held under an old petroleum law but were converted under the 1943 law with a special term of 6 years for selection of exploitation parcels. Three of these years are tax-free. The areas total 1,070,482 acres in the state of Falcon in Western Venezuela and are known as Buchivacoa 1 and 2, and Gueque 1 and 2. A topographical survey is just commencing on the Buchivacoa areas, with a geophysical survey slated for later this year. In the Gueque area a wildcat well will be drilled late in 1946.

Advantage of Centralization

Emphasizing the importance of centralizing Creole's geological laboratories at Caracas, Proudfit pointed out that this permits the company to act rapidly on new information coming from exploratory wells and field parties, thus saving many days.

The company's geological and paleontological laboratories have also been enlarged, he said, as it was found that regional geological studies are becoming increasingly important. The finding of new oil is growing more difficult in the Maracaibo and Lower Orinoco basins, because in most cases drilling has now to be done through unconformities. This means that regional geological studies and exploratory drilling must be used as a substitute for geophysics in many cases, it was explained.

Creole has taken advantage of the government's permission to resume aerial photographic work and has already photographed new exploration holdings, thus facilitating the work through the use of the relatively new science of aerogeology.

Commenting on Creole's refinery plans, Proudfit said that it had been found necessary to reverse the company's decision to build at Turiamo and that it has been decided to build on the Paraguana Peninsula in western Venezuela, on the shore of Amuay Bay, providing that an adequate supply of fresh water can be obtained. The possible need to go as far as 75 miles to obtain this water was cited. Negotiations have been started for pipe-line rights-of-way.

Refinery construction is expected to start this year and to be completed in 2 years. Amuay Bay, it was said, forms an excellent deep water harbor, and the terrain is well suited to the construction of the refinery and necessary facilities. It is about 150 miles, by water route, from La Salina, center of Creole's production activities on Lake Maracaibo.

In meeting the increased demand for crude in the first 3 months of 1946, Creole gained 30 per cent in net production, including royalty oil, with an average of 517,000 bbl. daily, compared with 397,000 bbl. daily for the first 3 months of 1945.

Argentina Will Purchase Middle East Oil

NEW YORK.—Indicating that South American markets are in a competitive position for both indigenous (largely Venezuelan) crude and crude from the Middle East, R. T. Haslam, vice president of Standard Oil Co. (New Jersey), told a press conference here last week that Argentina has just contracted for the shipment of 2,800,000 bbl. of Middle East oil. It is understood that this crude will constitute the first such shipment to South America.

Negotiations are now progressing between Arabian American Oil Co. and the Argentine Government-owned Yacimientos Petroliferos Fiscales (YPF) to supply Argentina 2,800,000 bbl. of crude over the next 18 months. Under the two proposals pending, the crude will either be delivered f.o.b. Ras Tanura or brought to Argentine ports by Arabian American, according to company officials. Jersey Standard was among the companies bidding for the crude to be imported by Argentina's Government-owned Yacimientos Petroliferos Fiscales (YPF), which recently

started an aggressive expansion program. Private operators there are engaged in large-scale modernization plans.

At present, Argentina's daily production is about 63,000 bbl., but its daily needs approximate 100,000 bbl., Haslam said. Commenting on the opportunities for private oil capital in South America during the postwar era, Jersey's vice president was optimistic and indicated that the time was not too far off when Brazil will join other South American nations in welcoming private capital. It is known that recently the president of Brazil was handed a congressional recommendation regarding approval of private capital in this country's refining industry.

It is interesting to note, Haslam said, that South America is the first continent to industrialize without use of coal, going directly from wood to oil.

Will Be Competitive

Haslam said Middle East crude will meet on a competitive basis in such markets as Rio de Janeiro and Buenos Aires as well as in France and other western European countries. He was optimistic about Venezuela's ability to compete in both markets, stating that he thought western Europe and South America will continue to be the principal markets for Venezuelan crude. Moreover, Venezuelan crude will continue to compete on a price basis with crude from the Middle East, whether or not the projected Trans-Arabian pipe line is built, according to this executive.

Illustrating his last point, Haslam said that theoretically the South American and Middle East crudes meet at Gibralter and from there either can be shipped competitively to western and northern Europe.

While declining to comment on the recently reported draft of Peru's new oil law and legal oil activities in Colombia, the Jersey vice president said he believed the tendency in both countries is to make it more attractive for foreign company operations, at the same time making it advantageous for both Governments to have their natural resources developed.

Haslam just returned from a 2½-month swing around South America.

Meanwhile, the Argentine Government announced the government-fixed quotas of imports of crude and products for the second quarter of 1946. The breakdown includes: crude 350,000 tons, fuel diesel and gas oil 500,000 tons, lube oils 2,500 tons, paraffin 2,500 tons, kerosene 35,000 cu. m., asphalt 150,000 kg., and lubricating grease 50,000 kg.

Y.P.F. is reported to have been authorized to buy oil equipment valued at $4,000,000 without fulfilling the formality of calling tenders. It is being pointed out here that a state of emergency exists in the production industry for which materials and equipment are urgently required.

New Australian Refinery To Use Crude From U. S.

SYDNEY, Australia.—Construction of a refinery at Bathurst, 100 miles west of Sydney, to operate on imported crude from the United States, is planned by the newly formed Bitumen & Oil Refinery Australia, Ltd. The California Texas Oil Co., Ltd., is reported to be subscribing $6,500,000 for this venture. Presumably, the new concern will be mainly Australian.

In the past 15 years, private firms and the Australian Government have spent about $12,600,000 in search for oil, but to date this country has no commercial production. The search for oil has been largely at Lakes Entrance, an inland waterway along the coast of Australia's smallest mainland state, Victoria.

While the Government has abandoned its efforts, a private concern, Austral Oil Drilling Syndicate, which holds large tracts of ground at Lakes Entrance, plans the formation of a $1,625,000 company to develop this area. In 1938, the Commonwealth Oil Advisory Committee reported that conditions here were favorable, and 2 years later American geologists submitted a similar report, restricting their report, however, to an area of about 400 acres.

Meanwhile, Australia's industrial shutdown, due to continued coal strikes and lack of a policy to build coal reserves, are causing business men here to turn their attention to the possibility of converting their plants to fuel oil. "Australia cannot submit indefinitely to being held to ransom and starved of coal by a small minority of the community," one industrialist recently stated, "and if coal miners continue to deny coal to industry, industry must, in self-protection, seek other fuel."

To date, Australia has three refineries: Commonwealth Oil Refineries, Ltd., at Laverton, a 2,000-bbl. daily skimming plant; Shell Oil Co. of Australia, Ltd., at Clyde, a 2,000-bbl. daily plant with cracking facilities; and Newport Oil Refinery, Ltd., at Melbourne, a small plant with an undetermined daily throughput.

Venezuela Workers Seek Pay Hike, Other Benefits

CARACAS.—Wage increases up to 150 per cent, additional days off with pay, medical assistance to workers' families, and better sanitary conditions are among oil workers' demands being discussed by representatives of Anglo-American oil companies and unions, according to reports current here.

Company officials said they were willing to increase wages but considered the demands as too high. Workers asked that $2.50 daily pay be raised to $6.00 and those making $3.50 demanded $8.00. At present, oil companies give 16-day vacations, with pay, a year.

Company representatives asked the Federation of Oil Workers to include in the collective contract port workers handling oil shipments at Barina, Puerto La Cruz, and San Joaquin. These workers belong to unions outside the FOW.

Thus far negotiations have developed in a friendly atmosphere and local newspapers have reminded the unions of the many benefits brought to their country by the oil companies, it was said.

Colombia Contracts for Handling Royalty Crude

BOGOTA.—A contract for the joint refining and marketing of Colombia's royalty crude, in which the Government and D. D. Feldman, independent Texas operator, will participate, has been announced here by Government officials.

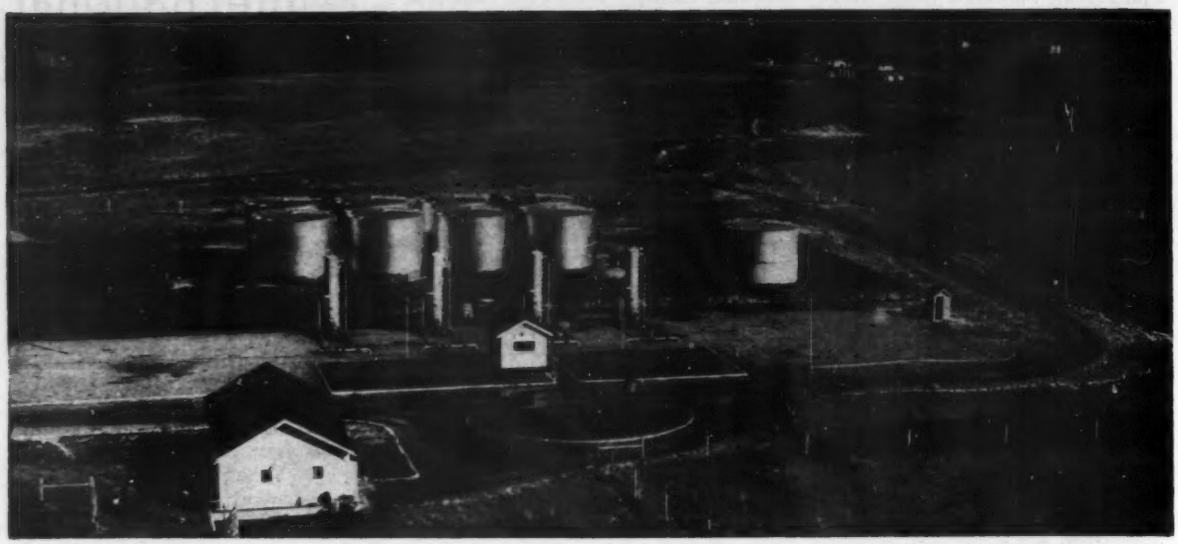
Colombia's current daily production runs around 62,000 bbl. It is estimated that the royalty oil will approximate 3,000,000 bbl. annually, and according to present plans, will be refined in Colombia, with a plant to be built at Bogota.

The program calls for the establishment of 185 service stations throughout this country to merchandise and distribute products. Petroleos Nacionales de Colombia is the name of the newly formed company.

According to the contract, Feldman is slated to subscribe to the entire 18,000,000 pesos ($10,440,000) of the new company of which he will be president. The contract gives the Government one-half of the profits and after 30 years an option on all of the company's equipment. While the Government will not assume any financial burden, it will direct fiscal control.

A later dispatch from Caracas, Venezuela, reported the Venezuelan Government is ready to sign a contract with Feldman under which he would buy 20,000,000 bbl. of royalty crude annually, about one-third of the total the Government receives. Feldman was said to have sought the entire amount, but the Government decided on a trial contract initially.

International



Storage tanks used for servicing surrounding wells in the Turner Valley oil fields, Black Diamond, Alta., Canada

Canada Vigorously Pushing Oil Search, Concentrating on Western Plains

by Warren W. Burns

TODAY Canada is engaged in the greatest search for oil in all its history, and the search is largely concentrated on the Western Plains. Generally speaking, the Western Plains include Saskatchewan, Manitoba, and that part of Alberta as far west as the foothills. The prospecting area in Canada's western territory is larger than Texas, Louisiana, Oklahoma, and California.

Canadian oil men are pouring more than $1,000,000 a month into exploratory work in Alberta—and this despite the fact that no new oil fields have been found there to date. However, a few widely scattered wells have yielded gas and some oil under rather promising conditions. These conditions have lead to exploratory and development expenditures in excess of $28,000,000.

Explaining the intensive search for oil in Canada, one source said that these expenditures have established Alberta as a tremendous reservoir of gas which may outstrip oil in importance. In terms of intangible assets it has brought a rich harvest of subsurface geological data which gradually narrows down the oil and gas search, and boosts the odds in favor of ultimate success.

In terms of oil itself, the flood of money has resulted in only a dribble. But oil men, realizing that recovery is dependent upon discovery, continue to believe that ultimately Canada's Western Plains may develop into one of the world's greatest oil-producing areas.

Importance of Gas Discoveries

Indicative of the importance which natural-gas discoveries are playing in Alberta fields is the fact that Imperial Oil, Ltd., by the end of 1946, may construct a plant there for the synthesis of natural gas to gasoline. Late in 1945 Imperial undertook a program to prove up huge natural-gas reserves on the Alberta plains, and in 4 months proved up over 77,000 acres east of the Viking-Kinsella reserve. Other companies may follow suit. The discovery of natural gas, instead of oil, is no longer regarded unfavorably, and Alberta wildcatters, instead of abandoning gas wells, now cap them for future production. But the discovery of oil remains the primary objective.

Of 1,600 holes drilled in western Canada, fewer than 12 can definitely be accepted as having been deep enough to test all the possibilities of sedimentary deposits. This is generally looked upon as a favorable indication for future possibilities, and future deeper drillings.

Western Canada, as Imperial points out, compares favorably, geologically speaking, with parts of the United States which have supplied Canada with crude in recent years. It is similar in structure and oil-bearing possibilities to those sections of the United States lying immediately to the south, namely, Montana, Wyoming, North and South Dakota, Colorado, Iowa, and Nebraska. In these states 10 times as many holes have been drilled as in Canada, and ultimate yield is estimated at about 1½ billion barrels. Canada's proven reserves are roughly estimated to be in excess of 51,000,000 bbl., with 21,000,000 in Turner Valley and the plains, and the remaining 30,000,000 at Norman Wells.

With reserves largely in Turner Valley, whose production is steadily declining, and Norman Wells, whose remoteness makes it uneconomical to transport crude to centers of population, it is evident that Canada must continue large-scale exploratory and development work. Turner Valley reached its maximum production in

February 1942 when daily output was 28,000 bbl. Since then it has dropped to 20,000 bbl. daily.

Canada produces only 15 per cent of its crude requirements and has less than 0.1 per cent of the world's proven reserves. Much of Canada's crude demand is supplied from South America and the United States. Indicative of the continued need to import crude, on April 18 of this year, four Canadian oil companies, Imperial, British - American, McColl - Frontenac and Shell, announced the joint purchase of the war emergency Portland, Me.-to-Montreal pipe line. The four companies acquired Montreal Pipe Line Co., Ltd., which owned the 72-mile line from the international boundary near Troy, Vt., to Montreal, and through a subsidiary, Portland Pipe Line Corp., acquired the 169 miles of pipe line from Portland to the boundary. Imperial's share is 40 per cent and the three others 20 per cent each. The pipe line has a 60,000-bbl. daily capacity and will continue to operate on a year-round basis as a common carrier.

In 1945, most drilling in western Canada was done in Alberta with some in Saskatchewan, Mackenzie River area, Northwest Territories; in eastern Canada drilling has continued in Ontario, Quebec (Gaspe), New Brunswick, and Nova Scotia. Prince Edward Island's deep test in Hillsborough Bay, was abandoned at a depth of 14,696 ft., finishing in salt, presumably of the Mississippian age. This is the deepest well drilled in Canada.

Of considerable interest in Canada is 1 Brazeau, in the central foothills of Red Deer, Alberta. Down to 12,000 ft., testing is being done in the Madison limestone. Potentially larger in size than Turner Valley, this indicated structure is being operated by six companies: Imperial, Shell, Socony - Vacuum, California - Standard, Home Oil, and Anglo-Canadian. It is thought that the wedge of Mississippian limestone encountered here is similar in type but more deeply buried than the limestone of the same age in the fault block at Turner Valley. Because of this another test is expected down flank to the west.

Other wildcats in which Imperial is interested include Stolberg, in foothills west of Red Deer, down to 11,919 ft.; 2 Davidson, Saskatchewan, being abandoned around 4,000 ft.; 1 Dewinton, in Alberta near Calgary, testing at 8,220 ft.; 1 Crossfield, located 20 miles northwest of Calgary, testing after drilling into Devonian around 9,000 ft.; Whirlpool, in Northwest Territory, just 30 miles south of Arctic Circle, down to 5,000 ft. in Silurian; and three exploration wells in Turner Valley.

Poor Man's Oil Field

Saskatchewan's "first gusher" recently came in at Lloydminster, which has been dubbed "a poor man's oil field," because of its shallow low-cost drilling, with oil rights held by a long list of small companies and lease holders. Preliminary news of this well being a "gusher," however, was somewhat exaggerated, and it appears that it will go on pump at 75 bbl. daily.

In the first 2 days this well produced about 3,000 bbl. of fluid which was trucked to a treating plant. About 1,230 bbl. of crude were recovered.

Gas flow with the oil during the first 2 days was estimated around 1.5 million cubic feet daily.

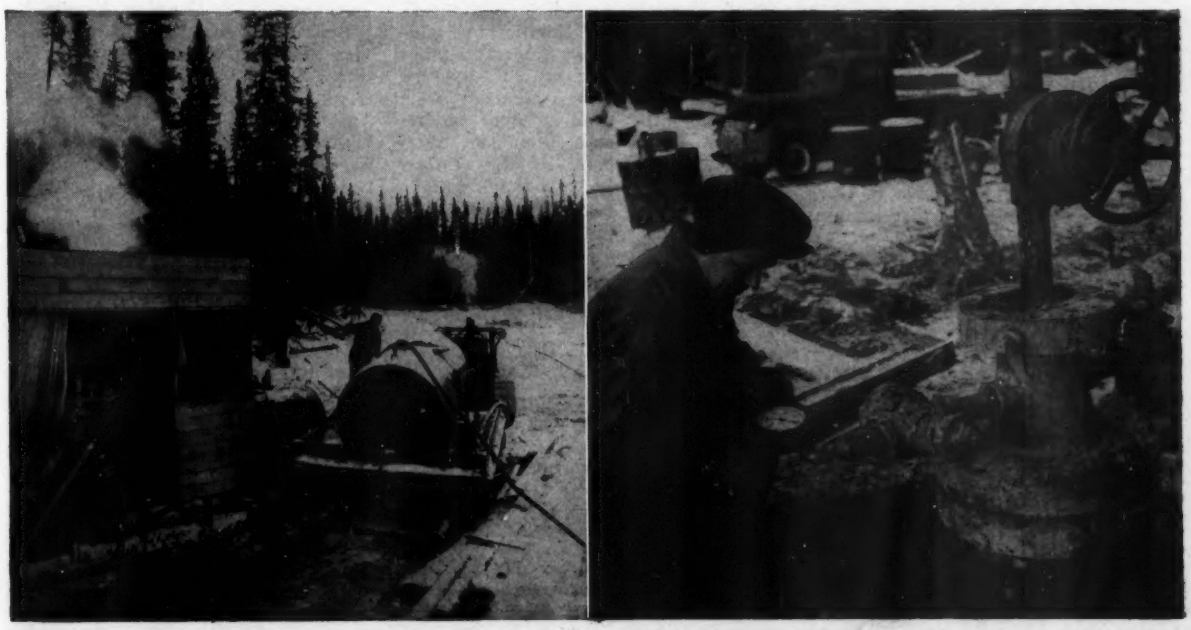
The well will be put on the pump, because flowing, while feasible, would be dangerous. The oil is heavy, 14.7° gravity, the pay is loose fine sand, and bottom water coning would likely develop if the well were pulled for any length of time.

This spring and summer Lloydminster is slated to be the scene of the largest drilling program in its history. Some 20 wells are planned for drilling by the end of July, with the bulk of them on the Saskatchewan side of the pool and the remainder in Alberta.

Lloydminster wells, producing from a Lower Cretaceous sand at depths ranging from 1,800 to 1,900 ft., are currently being drilled under turnkey contract for about $16,500, this charge including drilling, casing, pumping equipment, and storage tank. The oil, testing 14.7° (A.P.I.), is netting $1 per barrel at well tankage. Water and sand, present at all wells to some extent, are extracted at a local treating plant with the clean oil being sold to Canadian National Railways for fuel on its oil-burning mountain division.

Turner Valley drilling decreased in 1945 largely due to completion of the program undertaken by Wartime Oils, a Crown company which sponsored drilling of marginal wells during the war. As no new extensions were found in 1945, the number of good

Left: Pump house on sled runners and acid tank. Right: Worker inspects dial on acidizing head, at Norman Wells, Northwest Territory



drilling sites available within the proven part of Turner Valley is relatively small.

Principal hope for new major oil fields in Alberta lies in the foothills where deeply buried anticlines, or limestone ridges, of the Turner Valley type have been found. At Jumping Pound, 20 miles west of Calgary, Shell Oil of Canada, in 1945 drilled down flank in hope of finding oil, after getting gas and condensate on the crest, but found only water. Shell is again drilling closer to the crest and during this summer expects to determine whether or not Jumping Pound will show encouraging developments. Depths here range from 9,500 ft. down.

Other indicated foothill anticlines currently being drilled include Keystone Valley, by Roxana Oils Co., Ltd.; Sullivan Creek, by Phillips Petroleum Co.; Stimson Creek, by Consumer's Cooperative Refineries of Regina; Watson (Pincher Creek), by R. W. Hunter with private capital from the United States; and Ram River, by Ram River Oils of Ontario. Over 2,000,000 acres are under lease or reservation in the foothills belt, with active geological and geophysical work under way in addition to drilling. How many more prospective oil structures will be uncovered is anybody's guess.

In the Western Plains area there are scarcely any rock formations to guide geologists, and consequently costly geophysical methods must be employed. In the foothills, formations that may contain oil are deeply buried—in some cases more than 2 miles down, which results in unusually difficult drilling due to nature of the rocks.

East of the foothills and lying between the foothills and the plains is a great buried trough known as the Alberta syncline. This area, scarcely yet touched by geologist, geophysicist, or driller, is an active scene of exploration this year. Currently drilling is a joint Imperial-Anglo Canadian test at Crossfield, and a Royalite Oil test at Dewinton, while large reservation blocks are being studied by Shell, Home Oil, and C. & E. Corp.

Farther east are the Alberta plains. Their southern section has yielded the Conrad, Taber, and Red Coulee oil fields, the Princess oil and gas area, Medicine Hat, Redcliff, Bow Island and Foremost gas fields. Their central section has yielded the Vermillion, Wainwright, and Lloydminster oil fields, and the great Viking-Kinsella and East Kinsella reserves.

The fields established on the plains have set a variety of patterns for oil and gas traps in this region. Formations range in geologic age all the way from Upper Cretaceous to the Devonian at depths of 1,000 ft. to over 4,000 ft. On the south plains, crude ranges from 18° at Taber up to 34° in the Devonian at Princess. On the central plains, crude found to date is from 12° to 14°. So far, oil fields found in the plains have been small in extent, from 100 to 800 acres.

On March 25, Imperial junked 1 Redstone, located 230 miles south of the Arctic Circle in Northwest Territory, in the Norman Wells area, at 4,874 ft. due to mechanical difficulties. No favorable indications were encountered and none were further anticipated.

The geologic section of this well is believed to be as follows: 0-35 ft., surface sands and gravels; 35-565 ft., Cretaceous shales and sandstones; 565-1,705 ft., Imperial shales and sandstones; 1,605-2,675 ft., Fort Creek shales; 2,675-3,508 ft., Ramparts series; 3,508-4,160 ft., Lone Mountain dolomite limestone and anhydrites; 4,160-4,874 ft., series plus Mt. Kindles-Silurian; 4,874 ft., bottom of well.

Regarding the already legendary Canol operation, which was abandoned March 8, 1945, there have been no indications of any further interest in the U. S. Army-sponsored project. At the time operations ceased, 67 wells had been drilled, 60 of which were commercially productive. Of the seven dry holes, four were drilled quite some distance from the productive area in an attempt to extend the field.

Oil Must Benefit All, Senator Tells Nomads

NEW YORK.—Stating that oil can never again be made the instrumentality of exploitation for the few, Sen. Joseph C. O'Mahoney, (Dem. Wyoming), told the New York chapter of Nomads here last week that the shape of the world and its economic and political structure must be used for the benefit of all.

O'Mahoney reminded the 300 assembled members and guests that the principles of the Atlantic Charter, which were subscribed to by the Russians as well as others, held that the world's natural resources must be free to everyone. "Unless countries adhere to this principle," he said, "we cannot avoid future disaster in the form of another war."

William R. Boyd, Jr., president of American Petroleum Institute, introduced the speaker who is also chairman of special Senate committee investigating petroleum resources. John H. Baird, New York export manager and president of the New York Nomads, presided. William G. Green, president of Engineering Laboratories, Inc., Tulsa, and a member of the Nomads board of regents, spoke briefly on the organization.

Among the international guests present were Juan Bennasar, chief of the commission in the United States, Argentine Government Oilfields, Buenos Aires; P. K. Ozinga, drilling superintendent, Shell Co. of Ecuador, Ltd., Quito; A. J. Machicao, Bolivian Government Oilfields, La Paz; M. Schwob, Jean Bertaux, and Roger Buttin of the S.N. Marep Mission in New York and Pierre Abadie of the S.N. Marep Mission in Washington; J. O. Ledermann, field superintendent, Societe Nationale des Petroles du Languedoc Mediterranean; S. Makartumov and N. S. Tiodimfee of the Government Purchasing Commission of the Soviet Union, Washington; and Phil Reed, district manager, Richmond Exploration Co., Maracaibo, Venezuela.

Also present were H. M. Hohmann, Bataafsche Petroleum Maatschappij, The Hague, Holland; R. M. Tychanowicz, Polish Supply and Reconstruction Mission in North America, Washington; Enrique Otero, publisher of El Nacional, Caracas, Venezuela; J. D. Fullerton, production superintendent, Apex Trinidad Oilfileds, Fyzabad, Trinidad; W. J. Connley, Creole Petroleum Corp., Caracas; B. A. Myers, vice president and director, International Petroleum Co., Toronto; C. B. Hopkins, director, Imperial Oil Co., Toronto; Ross McAllister, Campbell McKee Co., Montreal; and S. Kajfez, Cardwell Manufacturing Co., Constantinople, Turkey.

Sen. Joseph C. O'Mahoney, Wyoming, is shown left talking with John H. Baird, New York export representative and president of the New York Chapter of the Nomads. William R. Boyd, Jr., president of American Petroleum Institute, is shown at right

Warren Petroleum to Retain Key Personnel of Hanlon Companies

WARREN Petroleum Corp. is retaining key personnel of the companies of E. I. Hanlon which Warren acquired in a $12,000,000 purchase completed last week in Chicago.

An account of the Warren-Hanlon negotiations appeared in The Oil and Gas Journal issue of May 4. The purchase was consummated in conferences with financial agencies in Chicago.

The six Hanlon companies involved in the transaction are Henaghan & Hanlon, Inc., Hanlon-Buchanan, Inc., Hanlon Gasoline Co., Hanlon Gasoline Corp. of Texas, Hanlon Pipe Line Co., and Smith Brothers Refining Co., Inc.

J. H. Boyle, president of Hanlon Gasoline Co., and Hanlon Gasoline Corp. of Texas, will become a vice president of Warren in charge of crude oil and natural gas operations. Hanlon himself, and D. E. Buchanan, president of Hanlon-Buchanan, Inc., have not announced their future plans.

Ray E. Miller, vice president in charge of sales of Hanlon-Buchanan, will become a vice president of Warren. James E. Allison, Hanlon-Buchanan's chief counsel, is joining Warren's legal staff. Other personnel of the Hanlon organization will be absorbed into the enlarged Warren company.

Raymond F. Kravis, Tulsa, petroleum engineer, has been retained to make a survey and valuation of all Hanlon properties. All Hanlon plants and facilities will continue as at present until their operations can be coordinated with those of the Warren organization.

The Hanlon companies owned and and operated natural gasoline processing plants having a combined capacity of approximately 75,000,000 gal. annually; gasoline marketing operations handling in excess of 250,000,000 gal. a year; tidewater terminals with pressure storage sufficient to handle full tanker loads of gasoline; a fleet of 150 pressure-type tank cars; crude oil properties in north Texas, the Texas Panhandle and Oklahoma with a gross production of more than 5,000 bbl. daily and a net production of 3,500 bbl. daily; and undeveloped and producing leases in excess of 225,000 acres.

Warren Petroleum and affiliates, prior to acquisition of the Hanlon subsidiaries, owned and operated natural gasoline plants having a combined capacity in excess of 205,000,000 gal. annually; tidewater terminals with pressure storage of more than 34,000,000 gal.; a fleet of 544 pressure-type tank cars; natural-gasoline marketing facilities handling more than 500,000,000 gal. a year, and extensive acreage of undeveloped oil and gas leases, together with 600 bbl. daily crude production.

Both Companies Major Manufacturers

Both the Warren and Hanlon companies are major manufacturers, exporters and marketers, principally of natural gasoline and liquefied petroleum gases. Warren Petroleum was organized in Tulsa in 1922 and prior to the acquisition of the Hanlon companies, employed about 500 persons. It was primarily a marketing company until 1935 when it acquired the gasoline department of Amerada Petroleum Corp. and added gasoline manufacturing to its operations.

Executive vice president of Warren Petroleum is J. A. LaFortune, who joined the company in 1924. He formerly was connected with the advertising department of National Petroleum News and later was assistant secretary of the Mid-Continent Oil and Gas Association.

The Hanlon companies originated in 1904 in Sistersville, W. Va., when Hanlon purchased the Daly interests in Henaghan & Daly and changed the name to Henaghan & Hanlon. Hanlon came to Tulsa in 1917 and joined Chestnut & Smith Corp. as vice president. He resigned from this company in 1929 and with Buchanan and Boyle formed Hanlon-Buchanan, Inc. Other companies were added as operations expanded.

Mud Control Being Taught

WICHITA FALLS, Tex.—The North Texas Oil and Gas Association is sponsoring a short course on drilling mud control at Hardin Junior College here with 80 enrollees representing drilling firms in the area. The course, to end about the middle of June, covers functions of drilling mud, field testing, conditioning, calculations, and practical mud programs,

Companies Buy Boats

WASHINGTON.—War Shipping Administration announced the sale of 19 small surplus vessels to Standard Oil Co. (New Jersey) and one to Standard Oil Co. (Indiana), totalling $429,000, during March 1946.

Pennsylvania Group to Meet

STATE COLLEGE, Pa.—The annual meeting of the Field Conference of Pennsylvania Geologists will open here May 30. Headquarters for the conference the final two days, May 31 and June 1, will be shifted to Altoona.

A.I.M.E. Preparing for New Year of Activities

The Mid-Continent section of the Petroleum Division, American Institute of Mining and Metallurgical Engineers, will install its new officers at a banquet in Tulsa May 29. The joint ceremony also will honor the national president, Louis S. Cates, who will end a 4-day tour of the local sections of the Petroleum Division.

President Cates will visit the West Texas section at Midland Saturday, May 25; the Gulf Coast section at Houston Monday, May 27; the North Texas section at Fort Worth Tuesday, May 28, and Tulsa Wednesday, May 29.

New officers, Mid-Continent Section, Petroleum Division, A.I.M.E.: W. B. Berwald, The Ohio Oil Co., chairman; R. C. Earlougher, The Earlougher Engineering Co., first vice chairman; W. A. Bruce, The Carter Oil Co., second vice chairman, and P. J. Manion, Stanolind Oil & Gas Co., secretary-treasurer

WASHINGTON WATCHING

BY HENRY D. RALPH

Oil-Price Decontrol

WASHINGTON. — Reasons why OPA should drop oil-price controls have been told so many times that oil men must mumble them in their sleep, and likewise Congressional committee records are replete with them, but Russell Brown of I.P.A.A. did a good job of summarizing them last week.

Not content to let OPA's Paul Porter have the last word when he wound up the hearings before the Senate banking and currency committee, Brown wrote Chairman Wagner ridiculing Porter's assertion that the coal strike makes it imperative to continue oil-price control. Using government figures, Brown showed that at the very maximum there would be an increased demand of only 100,000 bbl. per day for fuel oil by consumers equipped to shift from coal to oil. This, he pointed out, is less than 5 per cent of the total fuel-oil demand and is less than the normal variation in consumption from month to month. Furthermore, the best way to overcome any fuel-oil shortage which might develop is to permit the price to go up a little to cover the cost of marginal production.

"If there were a real shortage in the petroleum industry as implied by OPA," Brown wrote the senator, "it is obvious that it would be reflected in one or more of the following ways: (1) A record level of crude-oil production. (2) reductions in crude-oil stocks to the lowest pssible level, (3) capacity operation of refineries, (4) reductions in refined products stocks to the lowest possible level, and (5) an increasing total demand threatening further shortages. None of these conditions exist. The facts disproving them are readily available to all."

Gill's Report Quoted

As for OPA's great concern with the cost of living, Brown referred to the report of OPA's own advisory committee which said that if freed from control crude prices would rise 25 cents per barrel on top of the recent 10-cent increase permitted by OPA. Then he quoted from the 1943 report of Dr. John D. Gill, at the time the Petroleum Industry War Council was asking a 35-cent increase, which demonstrated that such an increase would cause a rise of 58/1,000 of 1 per cent in the cost of living index—too small to be measured on the graph.

The Senate committee expects to have the OPA bill rewritten by early next week so that the Senate can spend the better part of June tearing it to pieces. It will be mighty close to the June 30 deadline before industry knows for sure what kind of a price-control law it must operate under.

Inflation note: Last week District of Columbia barbers agreed to raise the price of a haircut from six bits to an even buck. This increase of 33⅓ per cent in a cost-of-living item was greeted with a loud silence from OPA which was too busy protecting consumers from the 58/1,000 per cent cost-of-living increase which might follow removal of oil controls.

New Land Bureau

THE General Land Office, one of the oldest bureaus of the federal Government, will be abolished in 60 days unless Congress votes disapproval of the reorganization plan President Truman announced last week.

In its place will be a new Bureau of Land Management in the Department of the Interior, which will absorb not only the GLO but also the Department's present Grazing Service. The new bureau will handle oil and gas leasing on the public domain, including the leasing of lands under the jurisdiction of the Department of Agriculture, since the same reorganization order gives Interior this function.

The president stated that consolidation of all land-management activities of the department into the new bureau will promote economy and efficiency and will also make it easier to maintain an integrated policy of development of the public domain.

The order abolishes the positions of commissioner and assistant commissioners of GLO, the director and assistant directors of grazing, the registers of the district land offices, and the United States superviser of surveys, though the functions of these offices will continue and the present incumbents probably will be retained in the new bureau under different titles.

This consolidation is one of the first steps in the departmental reorganization plan which Secretary Krug has had in mind since he took office. It is an example of reshuffling of powers respecting petroleum which the department's new Oil and Gas Division is expected to propose.

Stream-Pollution Bill

THE perennial Congressional battle over control of stream pollution is scheduled to take place again in the very near future. The House rules committee has approved early consideration of H.R. 6024, a new pollution-control bill drafted by Representative Mansfield of Texas and just reported by the House committee on rivers and harbors.

This bill is an attempted compromise between two opposite schools of thought on federal functions in pollution abatement, but it contains a large part of the proposals which the oil and many other industries have fought for several years. To mention just one such, the bill would make it a federal offense to permit any polluting matter to get into a navigable stream in violation of regulations to be set up by the Public Health Service, and federal courts are empowered to issue injunctions against such pollution.

An oil well flowing salt water which runs into a creek is an example of the pollution which the bill seeks to prevent, as well as the discharge of untreated city sewage and all types of plant and factory wastes.

For several weeks last winter the rivers and harbors committee held hearings on the Mundt and Spence bills, and the old arguments were thoroughly rehashed. The bill now on the House calender does not include all the objectionable features of the Mundt bill, such as the proposal outlawing every "new" source of pollution unless approved by a board in Washington—which oil-industry witnesses said meant a federal permit to drill a new oil well.

However, it does contain sufficient restrictions to make compliance very difficult for most industries. PHS is directed to draw up, in cooperation with states and industries, comprehensive programs for reducing pollution, including the dissemination of technical information on processes for treating industrial wastes before they reach streams. On request of appropriate state officials, PHS is to make special studies of the pollution problems confronting specific localities or industries, and make recommendations for correction. All the streams

of the country are to be grouped into sanitary water districts, and PHS will establish standards of cleanliness for each and promulgate regulations for keeping polluting materials out of the streams.

States and cities may obtain both loans and grants-in-aid for planning and constructing sewage disposal works, and industries may obtain loans (but not grants) from PHS for constructing treatment works necessary to comply with the regulations.

The bill declares it to be "a public and common nuisance" to permit any waste material to reach any navigable stream in violation of PHS regulations. Before starting federal enforcement action the surgeon general of PHS is to give written notice of an offense to appropriate state and local officials, but if the pollution is not stopped through application of local laws within 6 months the federal courts will be asked to issue injunctions against the offending oil well, refinery, industrial plant, or city city sewage works. No suit is to be brought until 2 years after passage of the act against sources of pollution which are already in existence, and an additional 5 years of grace may be granted by PHS if it is demonstrated that there is no practical method known to prevent a particular form of pollution.

"Mother Hubbard" Suit

BOTH the Government and the defendants are playing coy with the "Mother Hubbard" antitrust suit against the A.P.I. and major oil companies. Neither side wants the case to go to trial, but neither side is doing much about getting a consent decree.

It is a matter of saving face all around. It is nearly 7 years since the complaint was worked up and in the meantime the marketing practices under attack have changed considerably, many of the corporate defendants have gone out of existence, and a good many of the key witnesses have died. If trial becomes necessary it would possibly be easier for the Department of Justice to file an entirely new suit, based on current conditions, and drop the old one, though for publicity reasons it would doubtless file the new suit before dropping the old. However, its antitrust calender is pretty full, and it would be delighted to accept a consent decree which it could advertise as a substantial victory.

Some of the defendants are willing to agree not to do the things the D. of J. says they should not do, but they claim they have never done them in the past and they won't sign any decree which implies that they have. They would be willing to stand trial to vindicate their names, but would very much like to avoid the time and expense of a lengthy suit involving so many charges and so many defendants.

The defense attorney's committee has had only two meetings with the D. of J. to discuss a consent decree, the last one about a month ago. At neither meeting was anything concrete discussed. A number of trial balloons were sent up, but none of them has indicated which way the wind was blowing. Meanwhile the companies got the court to postpone for 1 month, or until June 20, the date for filing answers to the 1940 complaint. The date may be put off again or pro forma answers may be filed and negotiations continued.

Present prospects are that both sides will be content to continue consent decree discussions in a desultory fashion, each hoping that the other will get tired and drop the whole thing or else make a positive move to call the other's bluff.

Big-Inch Disposition

DISPOSITION of the big-inch pipe lines is getting nowhere fast, with everyone concerned waiting for someone else to make the next move, and the stalemate is not likely to be broken for a long time.

The War Assets Administration is on record, through the report of its predecessor Surplus Property Administration, as favoring sale or lease for oil transportation, with use for natural gas as a last resort. Two companies have applied to WAA to purchase the lines for gas use, but neither one could use the lines without a certificate of public convenience and necessity from Federal Power Commission. Both companies have applied to FPC, but a certificate would do no good without possession of the lines. Neither WAA nor FPC is anxious to move first, though both are "studying" the applications.

Further complicating the picture is the possibility that Congress will take a hand in the decision. Some WAA officials feel that WAA has full power to sell or lease the lines because it submitted a disposal plan to Congress and Congress took no action within the 30-day time limit specified in the surplus-property law. Others feel that this formality permits WAA to dispose only of pipe lines costing less than $5,000,000 each, and that Congress must be given the opportunity to veto a specific proposal for selling or leasing each individual property costing more than $5,000,000.

Regardless of this technical nicety, Congress may take action anyway if there are signs that a deal is being closed. Both the House committee on executive expenditures and the Senate committee on petroleum resources have announced the intention of holding hearings on the disposal of surplus pipe lines. Neither committee has set a date nor shows much interest in doing so in the near future, but the possibility that Congress may lay down specific policy directives is always present.

Though WAA is on record as favoring use for oil, it might feel obliged to accept a substantially higher bid for gas use. In either case it would have to make sure that no monopoly would be created, that small businesses would not be injured, and that the many other provisions of the surplus-property law are met. All these complications make it pretty certain that the lines will continue to lie idle for a good many months.

Aviation-Fuel Statistics

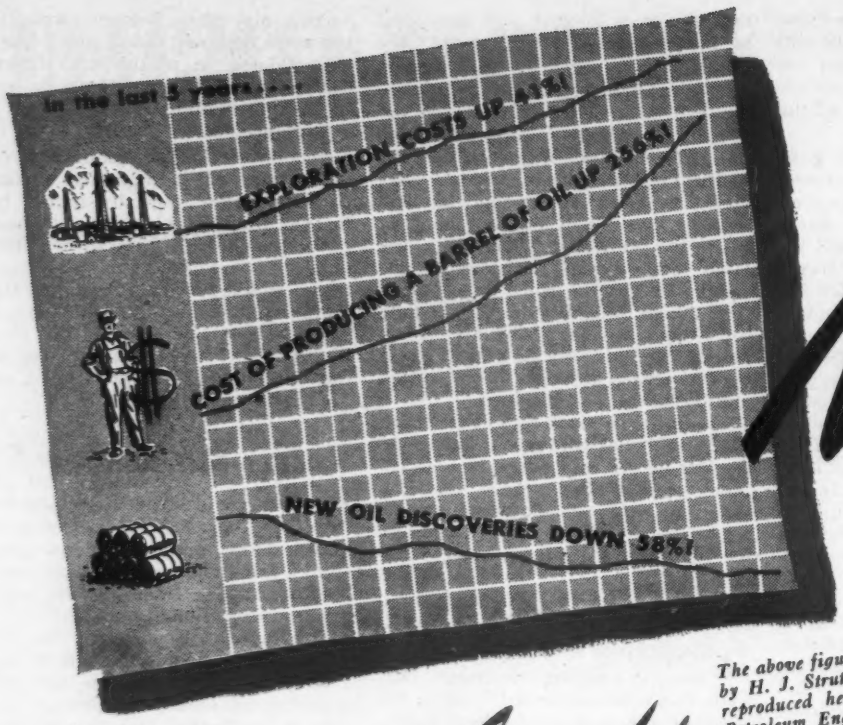
ONCE a zealously guarded top war secret, detailed statistics on aviation-gasoline production and shipment during the war are now available to anyone interested in statistical retrospection.

The Interior Department has just published detailed tables on various grades of aviation gasoline, by PAW districts, by months, showing such data as production, transfers between districts by rail, barge, and pipe line, military taking, exports, commercial use, and stock changes. They were compiled by George R. Hopkins in the program division of PAW, who each month collected and reconciled the differences in statistics from the Bureau of Mines, Commerce Department, and other agencies in order to keep PAW currently informed on the exact situation regarding this highly important and always scarce munition.

The story of 100-octane in the war has long since been told, but some industry men who sweat blood getting more production without being in on the secret figures may now find pleasure in seeing just how the output of each district climbed from month to month, or in learning that in August 1944, total production increased from 405,000 to 435,000 bbl. per day but was still 5,000 bbl. per day short of demand.

"Canned" Vehicles

A POSSIBLE use for empty lease tanks in storing idle oil-field equipment is suggested by the Army's latest project for "canning" vehicles, field guns, and other ordnance items. It is erecting more than 500 of its surplus standard bolted steel storage tanks at various ordnance depots where they will be filled with equipment, made air tight, and fitted with dehumidifiers. At any time in the future, the Army believes, it will be able to open the tanks, gas up the vehicles, and drive them off in perfect operating condition.



Now

The above figures are based on an analysis made by H. J. Struth, Petroleum Economist, and are reproduced here by special permission of The Petroleum Engineer.

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Drilling Fluids End "Refresher" Courses at Texas A. & M.

by E. H. Short, Jr.

COLLEGE STATION, Texas. — The course in drilling fluids, which ended here May 15, marked the close of a series of well-attended refresher courses sponsored by the petroleum engineering department at Texas A. & M. College. According to Harold Vance, head of the petroleum engineering department, the three courses offered this spring on well logging, reservoir engineering, and drilling fluids, were to take care of the rather immediate needs of ex-service men who have been out of contact with engineering advances made during the war period. He also said that other refresher courses would be sponsored in the future as the need becomes apparent.

The 2½-day conference, in session 17½ hours, was attended by over 160 representatives from various companies. The attendance list was made up of perhaps the widest range of position classifications found in any of the three spring conferences. The class consisted of: petroleum, chemical, service, sales, mud, district, reservoir, research, production, and drilling engineers; utility managers, manufacturers, superintendents, executives, operators, geologists, rotary drillers and helpers, Texas University students, and drilling contractors. These men came from Texas, Louisiana, Wyoming, Colorado, California, Oklahoma, Arkansas, New Mexico, Minnesota, and Pennsylvania.

Notes taken during the conference bring out some very interesting trends and advances in the use of drilling fluids during the past few years. Albert B. Stevens, assistant head of the A. & M. petroleum engineering department, led off the conference with a discussion pertaining to the function and properties of drilling fluids. In a brief historical review he pointed out that since the Spindletop days in 1901, when the rotary method came into prominence, drilling fluid, originally used simply to remove cuttings, was now effectively employed as a means of.

1. Removing cuttings.
2. Cooling the cutting edge of bit.
3. Walling the hole.
4. Controlling high pressure.
5. Holding cuttings in suspension when circulation is stopped.
6. Lubricating the drill pipe.
7. Supporting part of the drill pipe weight and casing.
8. Releasing cuttings and gas at the surface.

In discussing the properties of drilling fluids, Stevens explained that they were not true fluids, but rather complex fluid mixtures consisting of a base liquid, usually water, and a number of solid constituents in various forms and quantities. The efficiency of a drilling fluid in performing its many functions is determined by such properties as colloidity, viscosity, thixotropy, density, hydrogen ion concentration, sand content, and salt content.

In concluding his discussion, Stevens described an ideal drilling fluid as: "A fluid with viscosity such that it would flow freely, lubricate the drill pipe and slush pumps, cool the bit, and carry the cuttings to the surface without requiring excessive velocity. It would have gel characteristics which would allow the cuttings and gas to escape readily from it into the mud ditch or pit, and at the same time keep cuttings from settling to the bottom of the hole when circulation is stopped. It would have wall-building properties of such a nature that with very little loss of fluid it would form a thin, impervious mud sheath on the walls of the hole to prevent loss of fluid into the formations penetrated. It would be heavy enough to control pressures encountered during drilling, and it would be low in abrasive material and salt content."

Dr. H. T. Kennedy, Gulf Research and Development Co., Pittsburgh, lectured on the chemistry of drilling fluids. The wall-building properties of muds, as measured by the filtrate obtained in the Baroid tester, is increasing in importance, Kennedy said. Clay muds, without further additions, he pointed out, may have high filtrates, causing difficulties in drilling.

Control of gel strength, viscosity, filtrate, and stability, with regard to settling, is through the degree of deflocculation of colloidal material in a drilling mud. The degree of deflocculation, according to Kennedy, is dependent upon the action of certain materials in respect to electric charges carried by the dispersed particles. Laboratory tests show that when a dispersed clay is placed in an electric field, the charges are negative, since the individual particles move toward the positive pole.

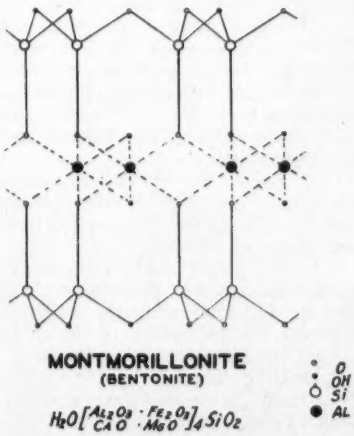
Charts Explain Work

The work of U. Hoffman and coworkers on X-ray diffraction patterns of the bentonite particle was explained by Kennedy and illustrated in Fig. 1.

Bentonite swells because the aluminum-silicon planes can be penetrated by water of hydration. T. F. Ford and others, he said, have already explained in detail the action of various viscosity agents.

Kennedy presented a chart (Fig. 2) showing the change in viscosity produced by various materials. He cautioned, however, that the curves were not intended to evaluate the agents, because effects vary, depending upon the drilling fluid.

Salts from the well bore, he continued, largely destroy the colloidal nature of clays, which necessitates



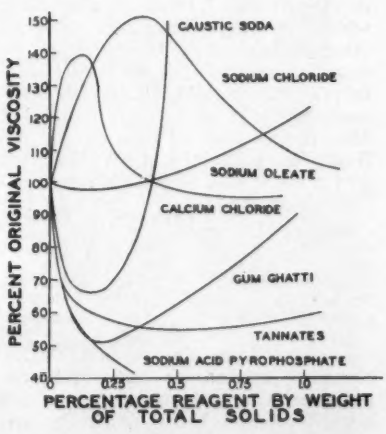
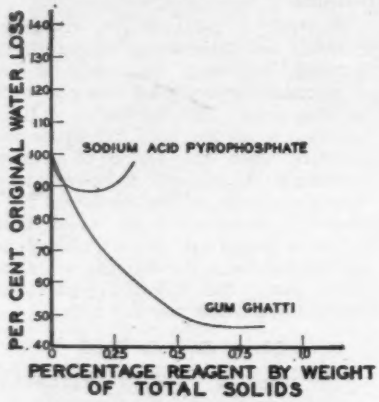
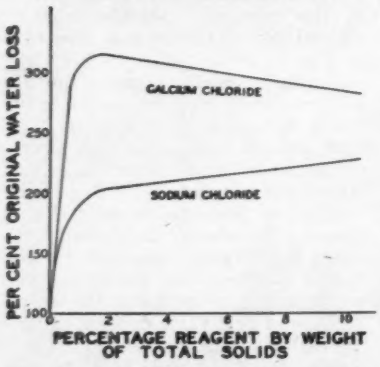


Fig. 1 (Left): The bentonite sheet exists as an aluminum oxide plane sandwiched by sheets containing silicon and oxygen. According to Dr. H. T. Kennedy, of Gulf, when allowance is made for substitution of other metals at various points in the lattice, this picture may be used to explain many facts in the chemistry of clays. Fig. 2—(Right) Curves (illustrative only) showing change in viscosity of mud produced by different materials

the selection of colloidal materials which are not affected. Muds composed of such organic materials as starches, or certain water-dispersible gums such as arabic, tragacanth, and karaya are actually improved with high salt content.

Chemical properties of starch and gums were reviewed by Dr. Kennedy during the course of his lecture. Quoting from A. W. Thomas, he explained that there are two kinds of granules





Figs. 3 and 4: Effect of different materials on filtrate of clay-fresh water muds

in starch: one known as a-amylose, which is water insoluble, and the other designated as B-amylose, which is water soluble. Soluble starch pertains to a dispersible variety (B-amylose) which is used in drilling fluids. The proportions of a-amylose and B-amylose contained in starches from five sources were presented as:

Starch—	a-Amylose (%)	B-Amylose (%)
Corn	15	85
Rice	18	82
Potato	97	3
Wheat	23.5	76.5
Cassava (Tapioca)	16.5	83.5

Quoting from Taylor and Iddles, Kennedy pointed out that starch suspension is due to swelling (which accounts for it being relatively unaffected by salts) and not through electrical stabilization. Before the starch can be made to go through a reverse swelling process similar to bentonite, the tough membrane which covers the cells must be removed by boiling or grinding the starch.

In concluding his lecture, Dr. Kennedy reviewed the available data pertaining to the chemistry of gums. This material is a natural mixture of potassium, calcium, and magnesium salts of carbohydrate acidic bodies. These show anodic electrophoresis which gives them, in low concentrations, a great deal of dispersing and viscosity-reducing power. An outstanding suspending power, unaffected by NaCl and $CaCl_2$, is shown at higher concentrations. Karaya gum, which is acid, is destroyed by highly alkaline solutions. More stable of the two, Ghatti gum is more effective in lowering the filtrate than as an agent in suspending the solid particles. In the formulation of drilling fluids of high salt content, however, the Ghatti gums and the Karaya gums are both particularly effective.

Muds capable of releasing gas picked up during drilling are extremely important. A number of agents are effective for this purpose, said Kennedy, such as alcohols, acetone, and other light solvents (Ambrose and Loomis).

Oil-Base Mud

Considerable interest was evidenced by those attending the session on the subject of oil base drilling fluid. Francis Anderson, Halliburton Oil Well Cementing Co., lectured at length on the application of this type mud. According to Anderson, oil-base drilling fluid is recommended for use in drilling conditions which cannot be satisfactorily met through the use of water and clay-base muds. Perhaps the most important function of this type drilling fluid is to eliminate water contact with the formation while drilling.

In rigging up to use oil-base mud, an enclosed mud system is necessary in order to eliminate rain water from the drilling fluid. In addition to this provision, said Anderson, steel mud tanks, mud saver, and drill-pipe wiper should be used. Waste of drilling fluid during pulling operations should be prevented through the use of a pipe-rack platform which permits oil from the pipe to drain back into the system.

With regard to application, Anderson pointed out that Howco oil-base mud is suitable for five well-defined conditions, as follows:

1. Low-pressure well completions, workovers, and low permeable sands. This type of mud, properly weighted, excludes the possibility of water intrusion into the producing horizon.

2. Drilling through bentonitic and other troublesome shale and clay sections. This type of fluid, according to Anderson, prevents disintegration and caving, since it does not penetrate or wet the formations. It has a wide range in weight from 7.35 lb. to 17 lb. per gal. He pointed out the fact that the 17-lb. mud has extremely good suspension qualities and that viscosity can be readily controlled.

3. This type of drilling fluid can be used for killing blowouts on high-pressure wells. It does not gas cut or break up on contact with hot salt water flows and can be weighted to 20 lb. per gal. for use in extreme high-pressure conditions.

4. Due to the sealing qualities of oil-base mud, and also viscosity control, it is effective in many cases in regaining lost returns.

5. Improved cement jobs are possible with oil-base mud when shale or clay sections are involved, since the oil-base mud leaves a solid formation to cement against instead of a soft plastic wetted shale.

In discussing hazards connected with the use of oil-base mud, Anderson emphasized the importance of weighting the mud above that of water when drilling through water sands. Fresh water, he explained, reacts on the soap content of Howco oil-base mud and causes an increase in viscosity. The diesel oil used in Howco base stock has a flash point of 200° F.; however, every possible precaution to safeguard against fire should be observed.

Anderson pointed out that oil-base mud is used several times; and also that a definite drilling advantage prevails under certain conditions when this type mud is used. These two advantages make the over-all cost extremely low as compared with conventional mud.

The recommended weighting material is oyster-shell flour ground to a fineness of 95 per cent through 325-mesh screen. Conventional weighting material may be used when heavier mud is desired.

Other speakers on the program were: George Gray, Baroid Sales Co., Houston; F. R. Lewis, W. L. Vincent, and Orien Van Dyke, Magnet Cove Barium Corp., Houston; P. E. Chaney and W. F. Oxford, Sun Oil Co., Beaumont; and R. S. Sullins, Humble Oil & Refining Co., Houston.

Rehearing Set May 27 On Kansas Spacing

WICHITA, Kans.—The Kansas State Corporation Commission has scheduled a rehearing here May 27 on its recent order setting 20 acres as the basic area in oil pools producing from less than 4,000 ft. and 40 acres for deeer pools.

The ruling handed down April 26 met opposition from a number of Kansas oil operators who contended the return to 20-acre spacing in effect before the war should have been complete. The commission's order set acreage attributable for proration purposes. Besides the deeper pools, the commission named 23 pools where the wartime 40-acre plan would be continued.

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Standard of Indiana Groups Exchange Technical Data

EDGEWATER PARK, Miss.—Scientific controls in manufacture of gasoline and other motor fuels are becoming increasingly important as more efficient engines require specialized fuels, Dr. D. P. Barnard, associate director of research of Standard Oil Co. (Indiana), told a group of Indiana Standard engineers and technicians here last week.

D. P. BARNARD

Dr. Barnard named automatic clutches and transmissions as the devices most likely to affect gasoline specifications. Improved manifolds also affect volatility requirements. "Since automatic clutches depend on perfect idling characteristics, they will make strict control of volatility necessary," he said.

More than 80 scientists, engineers, and technologists representing the Indiana company and its subsidiaries were here for the meeting which continued through the week. Some 70 papers on a variety of subjects in the petroleum technology field were presented.

Desalting Process

At Indiana Standard's Whiting refinery a desalting process using Fiberglas has been brought successfully through the pilot-plant stage and is now ready for a full-scale tryout, Dr. C. R. Harte of the Whiting research staff, reported. A paper by W. T. Herget of Pan American Refining Corp. described an electrical desalting method, which brings the salt content down to less than a tenth of an ounce per barrel.

Sulfur removal was discussed in several papers. In recent research on new catalytic methods for removing the sulfur from crude oil liquid yields of 100 volume per cent or even higher have been obtained, according to Dr. R. V. Shankland. A new sulfur removing process which sweetens gasoline in one step was described by Dr. Nathan Fragen.

Catalytic cracking operations have progressed so rapidly that they are already using a better catalyst than was employed during the war, A. C. Hershey, chief chemist of Standard of Indiana's Wood River, Ill., refinery said. Using the new catalyst, increased returns at Wood River amount to almost $1,000 a day.

Further progress in making gasoline from natural gas was reported by J. A. Phinney of Stanolind Oil & Gas Co. and Dr. E. W. Thiele of Standard of Indiana. "The process to be used will produce alcohols and other chemicals, as well as gasoline and lubricating oils, and is about ready for commercial development where special circumstances warrant it," they said.

Other developments reported included a research tool for evaluating burning oils, developments permitting better yields from oil wells, and production methods arising from use of the electron microscope. Logging of core-drill operations by gamma rays was described by Dr. Daniel Silverman of Stanolind's research laboratories.

New chemicals will make it possible to plate metals from two to eight times faster than ever before, it was stated at the closing session of the meeting.

"These remarkable speeds have been made possible through the use of new sulfonic acids which give not only faster plating but also brighter finishes," Dr. C. E. Adams of the Whiting refinery research staff reported. "The new acids have the additional advantage that they can be used over a wide range of operating conditions and are therefore more 'foolproof' than any previous electroplating bath."

Sulfonic Acid as Catalyst

Other possible uses for sulfonic acids include their use as a catalyst and where a strong acid is needed but where the oxidizing characteristics of sulfuric acid render it unsuitable.

The war plants used for making toluene are a tremendous source of new chemicals, Dr. R. J. Lee of the Pan American research laboratories reported. He stated that chemicals to meet many varied needs can be made by further reacting the products manufactured in peacetime operation of the toluene unit.

Manufacture of high-quality varnishes from petroleum instead of from linseed, tung, and similar oils may be possible in the future, it was predicted by Drs. P. L. Brandt and L. M. Adams of Pan American, who reported experimental varnishes now made in part from petroleum have excellent water resistance.

Dr. B. H. Shoemaker of Standard of Indiana declared that new ways of making alcohol from petroleum may reach the commercial stage soon by further perfecting processes partially developed by Germany during the war. The processes would be low-cost and would make available higher alcohols.

A new type of packing which may greatly reduce the height of towers in refineries and give better results was reported by William Kaplan of Pan American.

Koontz Named Head of Mid-Continent Petroleum

FRED B. KOONTZ, former vice president of manufacturing and a director of Mid-Continent Petroleum Corp., this week was elevated to the presidency, succeeding Jacob France who will occupy the newly created position of chairman of the board of directors.

The appointment of D. Glenn Morgan who has been general superintendent of the West Tulsa refinery of the company as manufacturing manager was also announced. G. E. Winn succeeds Morgan as general superintendent of the refinery, and Ed M. Downs and N. B. York will be his assistants. Harry Morton has been appointed process superintendent.

Koontz joined Mid-Continent in 1917 as a refinery technician; was promoted to refinery superintendent in 1922; and to vice president in 1928. His technical ability is highly rated in the industry, and he is credited with the rapid growth of Mid-Continent's West Tulsa plant to become the largest refinery operating exclusively on high-grade paraffin base crude.

Fred B. Koontz, newly elected president of Mid-Continent Petroleum Corp.

What Others Say

An Oil and Gas Division has been announced by the Department of the Interior and President Truman has urged a plan which will coordinate all the petroleum and natural-gas activities of the federal Government. An advisory committee from the petroleum industry similar in personnel and functions to the Petroleum Industry War Council to advise the government agency is part of the tentative program. On this page representative leaders of the industry give their views regarding the government program as outlined up to this time.

Industry Would Like to Turn Clock Back

Sirs:

The petroleum industry is very much concerned in President Truman's letter of May 3 in which he asks Secretary Krug to set up a new "industry advisory committee." The industry has had too many disappointments in the results of its "advisory committees" to be optimistic over the selection of a new committee.

We have recently seen advisory committees working weeks and months discussing and analyzing certain conditions and economics in the industry, finally reaching an agreement and submitting it to the proper office, where it was promptly pigeonholed or the recommendations denied.

When a large committee of trained executives, working hard and unselfishly on a problem of national interest, agree on what should be done, only to have the report torn to pieces by a few young men wholly inexperienced in the petroleum or any other business — the question naturally arises, "What's the use?" The industry will await with interest further information on the formation of the committee, its functions, and authority before accepting it as a constructive move. The industry would like to turn the clock back to the good old days when we seldom thought of Washington in connection with operations.

We would like to conduct the industry on a free and competitive basis, limited of course to the laws of the Government and to the regulations of the various state regulatory bodies.

E. B. REESER,*

*Mr. Reeser is a former president of the American Petroleum Institute and served as a member of the Petroleum Industry Advisers Committee during the war.

Constructive Move if Properly Set Up

Sirs:

Many federal departments and agencies now have an interest in petroleum. President Truman has recommended that these interests be centralized in a single agency, and that Secretary Krug and the Department of the Interior undertake to unify and coordinate federal policy and administration with respect to matters affecting petroleum. The recommendation carries with it the suggestion that an industry advisory committee be appointed to consult and advise with the new agency.

If the agency and the committee is properly set up it would appear to be a constructive move. It should result in elimination of duplicating agencies at least.

The agency would not be vested with the broad powers under which Petroleum Administration for War functioned. An executive order of the president could give the agency only limited authority. It might have been better to create the agency by legislative act with a limitation placed on its powers and duties.

If the agency will seek to help the industry and act as a clearing house for the problems which industry has with Government, it can be helpful. If it tries to assume a paternal attitude towards the industry and attempts to set a national policy on petroleum, it could be harmful. A national policy on oil and gas should be determined by the Congress.

If an industry advisory committee is appointed which will be truly representative of the different branches of the industry and whose members have a knowledge of its problems, the committee will have a balancing influence on the functioning of the newly created agency.

The petroleum industry is an important element in the national economy, and if it is to perform its peacetime job of properly serving the consuming public, it must operate unhampered and free of needless restrictions. It is hoped that full consideration will be given to these facts by the new agency.

B. A. HARDEY,
President, Independent Petroleum Association of America.

Much Depends on Selection Of Bureau Chief

Sirs:

Although I have not had an opportunity to think out how this proposal might work out in detail, it would appear offhand that such a division would afford an appropriate means whereby the Government's interest in matters pertaining to oil could be centralized and coordinated. Quite apart from the organizational arrangements, the selection of the man to head the division is obviously of paramount importance. Under able leadership, one could expect excellent results for both Government and industry. Under less capable leadership, quite the opposite might be the case. Certainly, under one such as R. K. Davies, who has been suggested as a possible chief of this division, one would expect the best.

B. B. JENNINGS,
President, Socony-Vacuum Oil Co., Inc.

Sees No Need for Concentrating Activities

Sirs:

If the proposed new setup is designed to coordinate and carry out more efficiently the general types of functions which have in the past been carried out by more scattered federal agencies, I think it is a good thing, although I see no particular need to try to concentrate all government activities pertaining to oil into a single department. If, on the other hand, this move is to be a stepping stone to increasing control of the oil industry by the federal Government, I would not favor it.

A great deal of the success of the new plan depends, of course, upon the man selected to head it, and it will not be easy to get a man with the necessary experience and ability to command the respect of both the Government and the industry.

With regard to the proposed industry advisory committee, I am sure that if the Government really wants an advisory group and will give heed to it as did Secretary Ickes and his organization, the industry will be very glad to meet with the government representatives from time to time and discuss problems of mutual interest.

ROBERT E. WILSON,
Board chairman, Standard Oil Co. (Ind.).

Move Is Appropriate; Industry Should Cooperate

Sirs:

I believe that the Government can very appropriately center its interests in oil in the Department of the Interior. This, of course, does not mean that all other departments of the Government can immediately cut off their oil activities, but much can be done in Government toward centralization in one department.

I was one of those members of PIWC that favored continuation of an industry policy group that would be available for consultation with Government on matters pertinent to the public interest. If the secretary of the interior under his directions from the president appoints an industry policy committee I believe that industry should fully cooperate and through such cooperation attempt to limit the activities of the Government to matters of broad national interest properly within the scope of federal jurisdiction.

JOHN M. LOVEJOY,
President, Seaboard Oil Co. of Delaware.

Favors Some Means of Continuing Cooperative Effort

Sirs:

As long ago as before the war, I held the view that some form of cooperation between the oil industry and Government was desirable and would be to mutual benefit. During the war this cooperative effort was established through the agency of PAW and its effectiveness so amply proved by results that I do not think I need to add anything here. Because of the benefits derived during the war, I felt that some means for continuing this cooperative effort should be maintained in peacetime and, accordingly, was in favor of the proposed petroleum council about which Alton Jones polled the industry in December 1945. Speaking generally I feel it most desirable to have such arrangements made as will insure proper contact and cooperation between the Government and the oil industry.

R. G. A. VAN DER WOUDE,
President, Shell Union Oil Corp.

DeGolyer Tells of Foreign Operating Conditions

(Continued from page 90)

own nationals, an alien's position is in a sense a privileged one, for the standard of treatment to which international law entitles him is an objective one, and he need not, even though nationals must, submit to unjust treatment.'

"Generally speaking, operations in foreign lands may be and often are subject to difficulties of which the average independent operating only in the United States finds it hard to even conceive. This is more nearly true for exploratory operations than it is for development operations, once a field has been found.

"Any initial operation by Americans in a foreign field is likely to be of an exploratory nature. It is natural that such ventures should be handled by Americans, but it is highly desirable, in case of success and long-continuing operations, that nationals of the country in which the operation is conducted be trained to replace Americans in every possible job, including the higher administrative posts, for which capable men can be found.

"This is no hard and fast rule but it is worth noting that in Mexico, one of the chief complaints of the Mexicans, and it appears to be a just one, was that the Mexicans themselves were shut out from the higher technical and administrative posts. It is notable also that for one of the principal American operations in Venezuela, all the drillers are Venezuelans as well as the chief geologist and chief petroleum engineer and perhaps other important posts not known to me are likewise filled by Venezuelans.

"There are two points with regard to finance that you should consider—difficulties, if you please. One is that foreign oil is not generally regarded so favorably as bank collateral as is domestic production. Consequently, you are likely to find your development funds either through company organization or through partnerships, in case you discover oil.

"The second is that through money-export restrictions, you may have difficulty in moving money back into this country."

Stripper Well Officials Want Bonus Extended

In a 2-day session this week in Tulsa, called by H. M. McClure, president, the executive committee of the National Stripper Well Association, together with invited representatives of local stripper associations, worked on the development of a common policy and program for the continuation of a price differential for marginal production.

As the subject developed during discussion, it was pointed out that since refiners could not pay two different prices for oil of the same quality, some sort of federal government payment was the only alternative. Such a payment, in the opinion of many of those present, must have a sound objective that fitted in with general national policy.

It was suggested that a study be made, preferably by some government agency, to determine how many millions of barrels of proven reserves underlie stripper wells. Another study would determine how much of this reserve would be lost if the wells were abandoned because of high lifting costs. On this basis it was pointed out that sound estimates of the value to the national welfare of stripper well oil could be obtained, and that Congress would then be justified in appropriating funds to put a floor under the price of stripper production.

Gasoline Prices Firm, But Demand Softening

SOME slight unseasonal slackening of demand for gasoline was reported in the Mid-Continent area this week, although quotations for the oil industry's main money product appeared firm.

One marketer said inquiries have slowed but would again pick up as soon as distributors were able to get a better picture of June requirements. Another market observer said wet weather had interfered with farm activity in the north central section.

Gasoline quotations ranged upward from 5½ cents for regular on the Group 3 basis. Some few quotations for resale were ⅛ and ¼ cent below this figure. Price of premium grade was 6⅛ cents and higher. On the Gulf Coast, regular was reported at the ceiling of 5¼ cents with demand continuing strong.

Natural gasoline stood at 3 cents in Oklahoma and 2½ cents in North Texas for 26-70 grade. There were some indications of another advance. Two weeks ago, it moved up ¼ cent in both areas, the first rise in more than 2 months.

Market developments in other petroleum products were marked in some areas by strong demand for light fuel oil, unexpected at this time of the year. In New York the market in No. 2 fuel oil was steadied by the activity of several large buyers, including the Navy which was reported to have contracted for more than 2,000,000 bbl. of No. 2 on the Gulf Coast to use in its special fuel oil. This strengthened a market which had showed signs of weakening. Jobbers also were trying to fill depleted storage and in anticipation of higher prices, it was reported.

Daily gasoline demand for the week ended May 11 showed a second drop from the high point reached April 27. May 11 week demand was 2,042,000 bbl. daily, a drop of 97,000 bbl. daily from the preceding week and 191,000 bbl. daily from the April 27 week. During the May 11 week, light fuel oil demand gained 126,000 bbl. to 739,000 bbl. daily.

Confirming what the oil industry already recognizes—that 1946 demand is far above estimates late last year—the Department of Commerce last week reported consumer expenditure for gasoline in the first quarter of this year was 67 per cent over the total of the corresponding 1945 quarter. In its publication, Current Business, the department said consumers spent $2,500,000,000 in the first quarter of 1946 against $1,500,000,000 in the same 1945 quarter. The increase for all goods and services was placed at 20 per cent over the 1945 quarter.

DEATHS

Fred W. Frost, 61, oil operator who held extensive interests throughout Texas and other southwestern states, died May 14 in San Angelo, Tex.

J. R. Underwood, 68, treasurer of Unit Rig & Equipment Co., died May 12 in Tulsa.

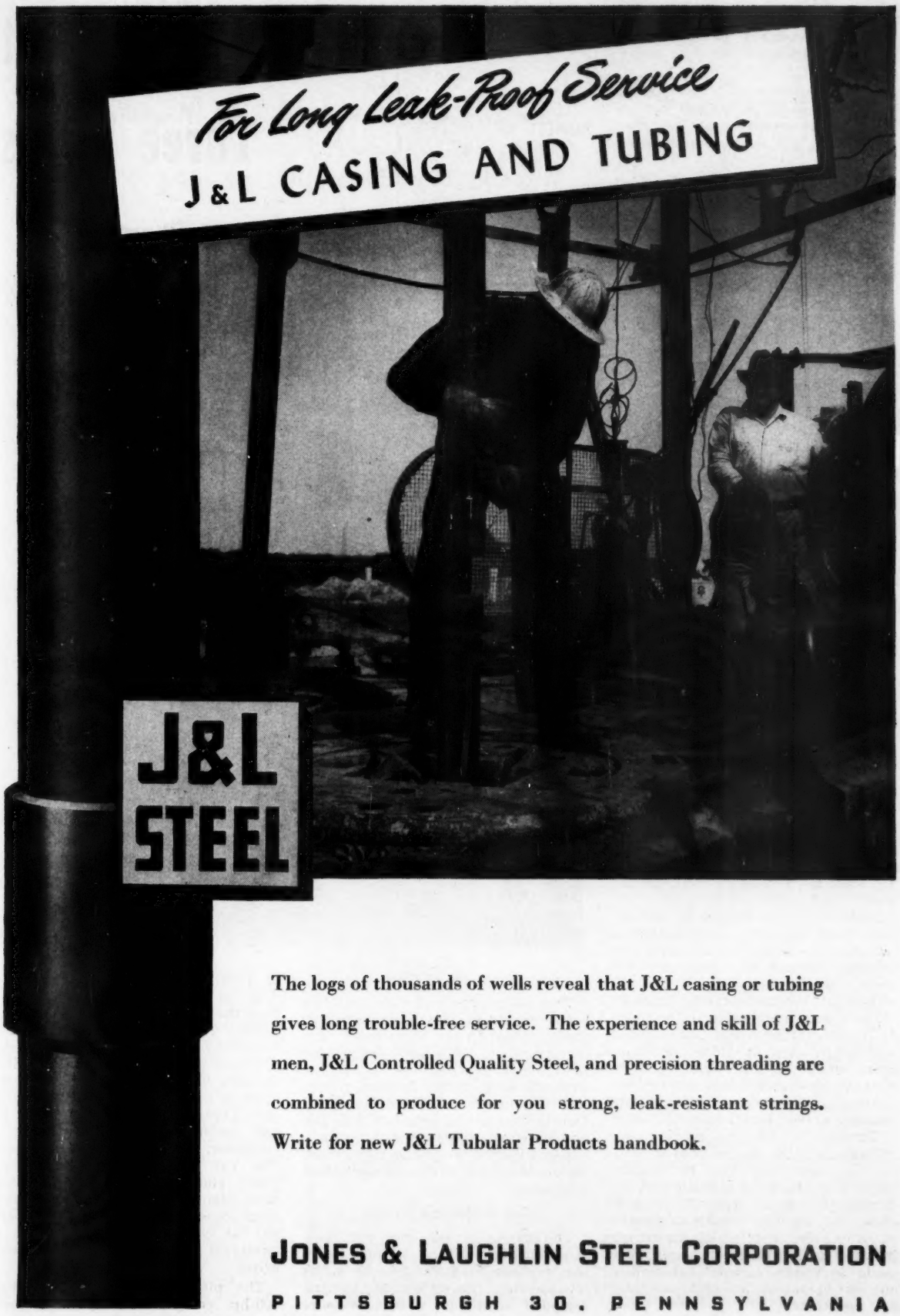
Frank R. McGrew, 64, retired executive of Standard Oil Co. of Louisiana, died May 11 at his home in Shreveport. McGrew first worked in the oil industry for Eureka Pipe Line Co., St. Marys, W. Va., during summers while attending Marietta College, Marietta, Ohio. He joined Standard Oil Co. of Louisiana in 1909 and remained with the company until his retirement in 1937. At that time, he was vice president in charge of pipe line operations.

Eugene S. Adkins, 49, died May 17 at Vinita, Okla. Adkins, a resident of Tulsa, founded the Adkins Oil Co. which drilled the discovery well of the Benton pool in Illinois.

Kenneth Wingate, 59, died May 16 at Eastland, Tex. A resident of Eastland since 1919, Wingate was superintendent of Kewanee Oil & Gas Co.

Merrel E. Stuchel, 50, oil operator in the Bradford and Allegany fields of Pennsylvania and New York, died May 11 in Bradford, Pa.

Earl V. Kesinger, 50, vice president of Natural Gas Pipe Line Co. of America and Texoma Natural Gas Co., died May 13 at his home in Wilmette, Ill. Kesinger joined Cities Service Oil Co. in 1917. In 1930 he left Cities Service to become chief engineer of Natural Gas Pipe Line.



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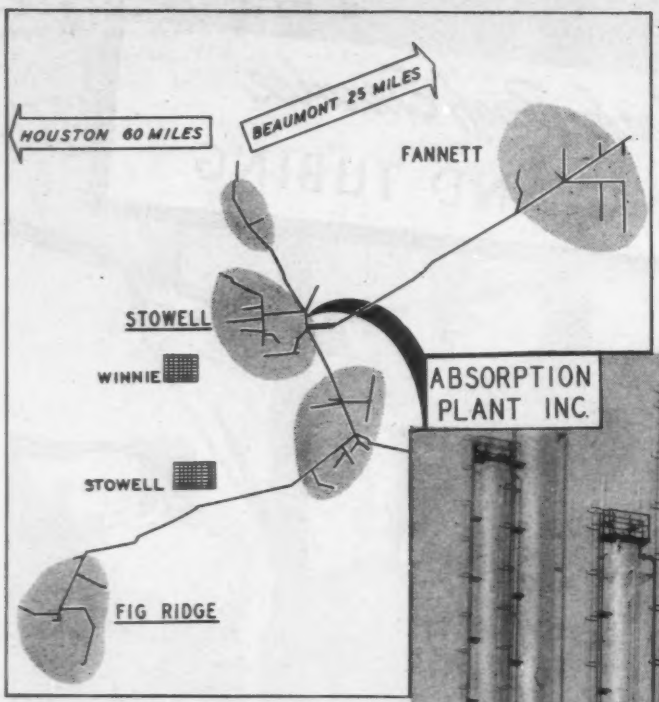
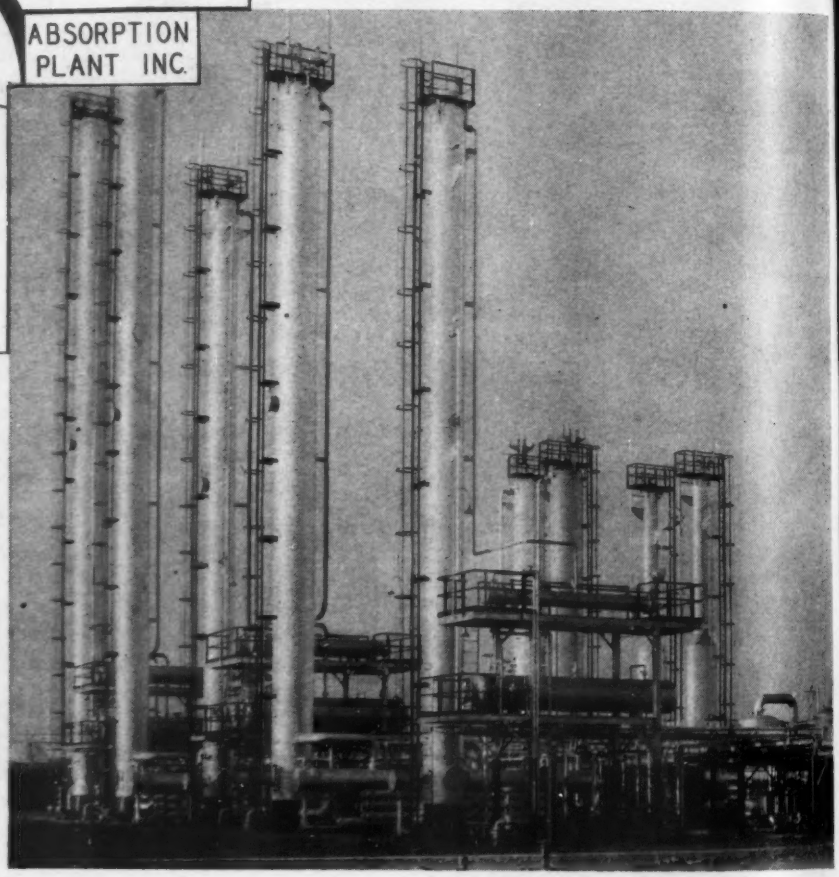
PITTSBURGH 30, PENNSYLVANIA

New Gulf Coast Three Fields

by E. H. Short, Jr.





Absorption Plant, Inc., serves three fields, has something over 75 miles of gas-gathering pipe lines. From plant to outermost portion of Fig Ridge is 11.2 miles, and to Fannett 7.8 miles. At right is closeup of main processing area

THE Glenn H. McCarthy gasoline plant, recently completed at Winnie, Tex., has a number of unique features which makes it one of the most outstanding plants of its kind in the Gulf Coast area.

Located in the approximate center of the Fig Ridge, Stowell and Fannett fields, the plant was constructed in order to utilize the waste gas from the producing wells in this area.

This enterprise, known as Absorption Plant, Inc., is a combination of two plants—distillate extraction and straight casinghead. Although the project was built primarily for the war effort, it was privately financed.

The plant was designed by Stone & Webster Engineering Corp. and it was constructed by this concern as agent under the supervision of D. C. Harman, production manager for McCarthy. Construction was begun January 4, 1945, and despite the usual difficulties in wartime procurement of materials, it was placed on production approximately 12 months later. The unusual fluctuation in the demand for liquid products brought about by postwar conditions resulted in changes in plant design during its construction. These changes were made to insure complete flexibility of plant operation during future market variations.

Source of Gas

The gas processed by the plant is produced from approximately 188 wells located in the three fields. The depths of the wells vary from 7,400 to 10,500 ft. Much of the area in the three fields is highly faulted, resulting in numerous producing horizons. Due to the faulted condition, oil, gas, and gas-condensate wells occur in a random manner over the field, making repressuring or cycling operations impractical.

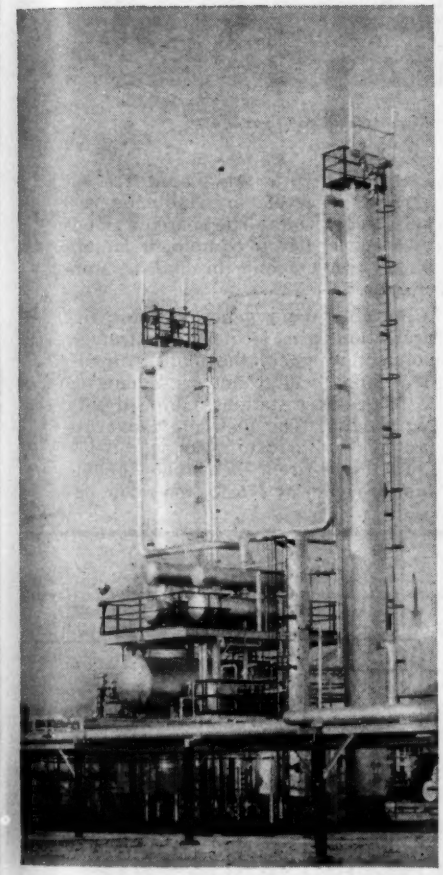
Gas-Gathering System

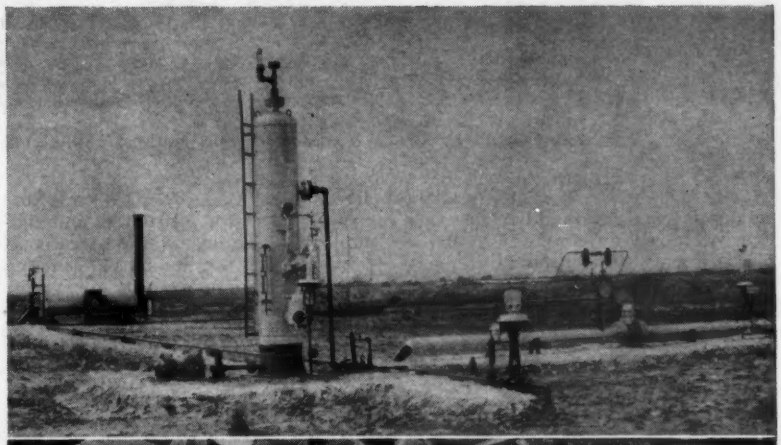
The gas-gathering lines are composed of over 75 miles of pipe varying in diameter from 2 to 30 in. A low-pressure gas-gathering system, designed to operate with a pressure of 7 lb. at the field batteries and 6 in. of vacuum at the plant, handles the gas from 179 low-pressure wells. A high-pressure gathering system which takes the gas from nine distillate wells is made up of 15 miles of pipe. This line is designed to operate at a separator pressure of 1,000 psi. Liquid production is extracted and measured at the high-pressure separator, and the gas is metered. The two streams are then recombined and transferred through the same high-pressure line to the plant. Both systems were designed to permit the tying-in of future wells at a minimum amount of time and expense.

The plant is equipped with ten 800-hp. compressors, installed back

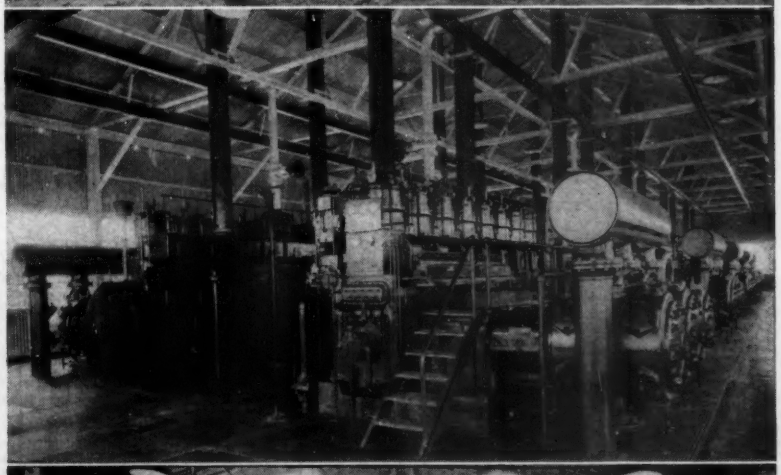
Gasoline Plant Serves

Plant handles 30,000,000 cu. ft. of low-pressure and 55,000,000 of high-pressure gas per day. Total products, 85,000 gal. a day. Uses ten 800-hp. compressors





Below, top: High-pressure gas-well hookup showing distillate meter on separator. Gas and distillate are recombined after metering and go to plant in same line

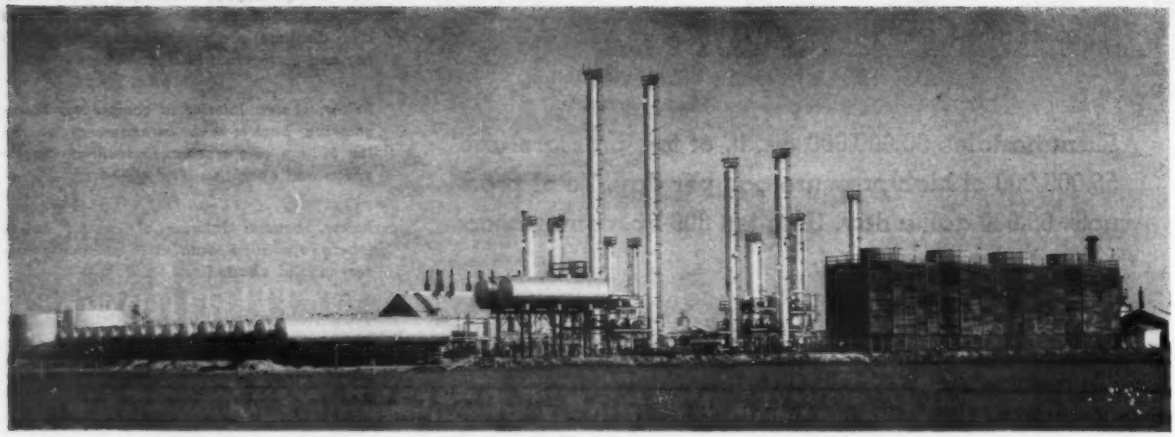


Below, center: Interior of compressor house showing back-to-back arrangement of the ten 800-hp. compressors, to facilitate supervision and operation

Below, bottom: Interior of control house where operating data are constantly observed and charted

to back to facilitate operational supervision. Due to the relatively large size of the individual suction and return lines to these compressors, horizontal installation was made with right-angle expansion bends instead of expansion loops ordinarily used in high-pressure cycling plants. Jacket water to the compressors (cooled by the plant circulating system) is supplied by a turbine-driven pump and two motor-driven centrifugal pumps. Jacket-water makeup is supplied from steam condensate. Compressor-starting equipment consists of a gasoline-engine-driven compressor and two motor-driven compressors.

All fractionating towers and related equipment are installed back to back in order to provide one cen-



Absorption Plant, Inc., is a combination unit handling both distillate and casing-head gas

tral operating aisle. A grouping of the condensers and accumulators for each pair of towers effected a saving in the structural steel used in supporting overhead equipment. The fabrication and construction of piping and pressure vessels in this plant were in accordance with A.P.I., A.S.A., and A.S.M.E. codes.

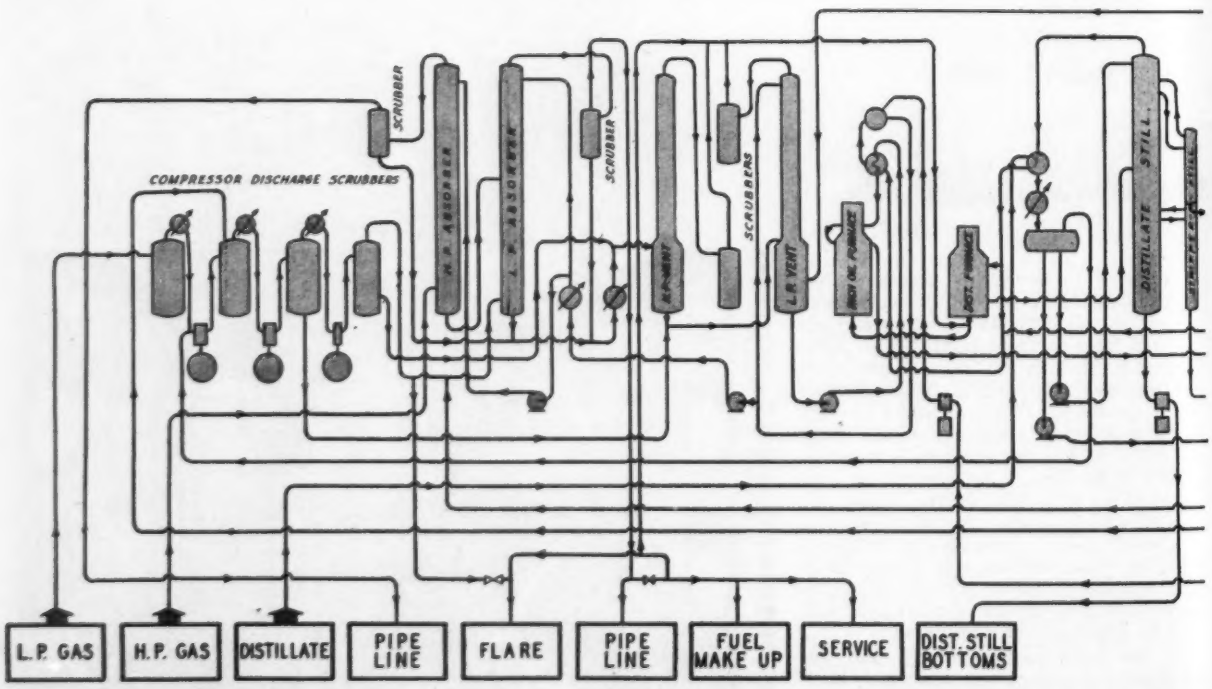
The cooling tower is of induced-draft design, with four cells. All water-cooled units are of shell-and-tube construction, resulting in a less involved piping layout and cooling-tower construction. Two gas-engine-driven pumps supply circulating and cooling water for all coolers and condensers. Cooling-water treatment consists of a continuous chlorination system to minimize algae formation, and a chemical treatment of makeup water for scale prevention and pH control.

The plant is supplied with electric power (reduced to 2,300 volts and 440 volts at the plant boundary) by Gulf States Utilities Co. An underground cable system carries current to the 2,300-volt motors, and the 440-volt lines are in overhead conduits. Lighting circuits are placed at convenient intervals by reducing 440 volts to 115 volts. The spare or standby electric driven equipment is supplied with current through separate circuits.

Portable foam generators for fire protection are located at strategic points throughout the plant. An underground water line is connected to 18 fire-hose stations equipped with fog nozzles. The distillate tanks are provided with foam systems.

Two gas-fired bent-tube boilers supply steam at 175 lb. for plant op-

Starting with the entry of the low-pressure gas, high-pressure gas, and distillate (lower



eration. Each of these boilers is capable of supplying 15,000 lb. per hour. The induced-draft fans are turbine driven. Intake water to the boilers is supplied by two steam-driven reciprocating pumps. Steam condensate is deaerated and heated by contact with exhaust steam and boiler feed make-up in a strip tower.

Storage tanks in the plant consist of: Five 5,000-bbl. bolted tanks for distillate storage and motor fuel and one 10 by 25-ft. underground tank for lubricating oil.

Plant Operation

The plant is designed to handle 30,000,000 cu. ft. of low-pressure gas and 55,000,000 cu. ft. of high-pressure gas from gas-distillate wells. With an intake of 85,000,000 cu. ft. the approximate daily production of the plant should be as follows:

	Gal.
Propane	13,000
Butane	18,000
Motor gasoline	42,000
Kerosene	7,500
Diesel fuel	4,500

The motor fuel manufactured is 65½ A.S.T.M. octane without the addition of lead.

The absorption of gas is accomplished in two 22-plate absorbers. One absorber is charged direct with gas at 825 psi. from the plant separator system. The other absorber is charged with 450-psi. gas from the compressors. Gas from each absorber goes into individual 10-in. gas-transmission lines.

Oil from the 825-psi. absorber is used in the lower section of the low-pressure 450-psi. absorber. The rich high-pressure oil flashes as it enters the midsection of the absorber, losing an appreciable amount of methane. Upon contact with the rich low-pressure gas it is further demethanized. The process of stripping the low-pressure gas is completed in the upper section of the 450-psi. absorber with a stream of lean oil. According to the designers, lean-oil requirements are reduced by 40 per cent through this piping arrangement, as compared with separate handling of the high-pressure and low-pressure rich-oil streams.

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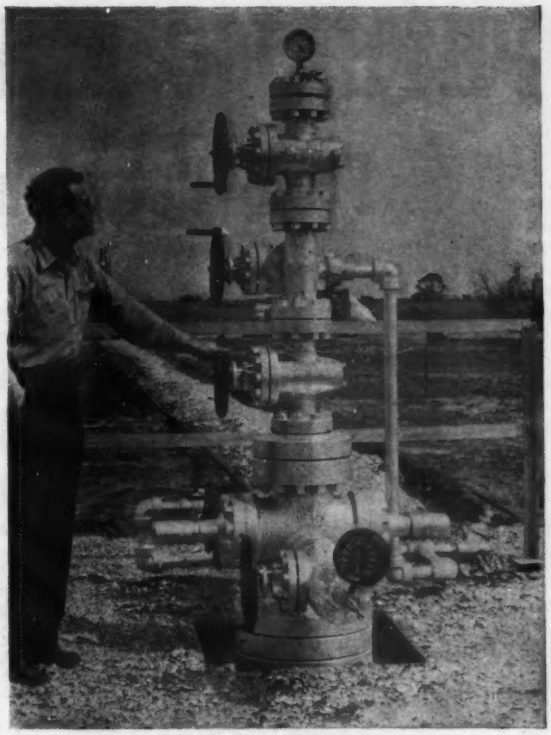
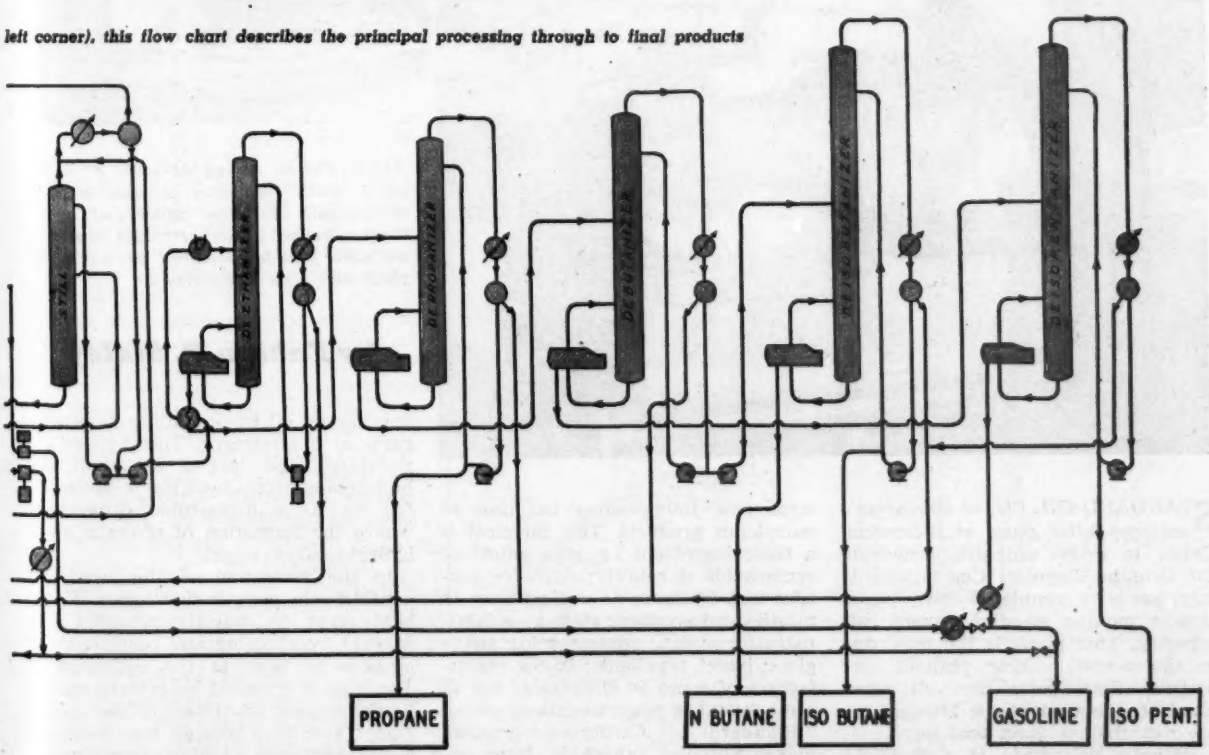


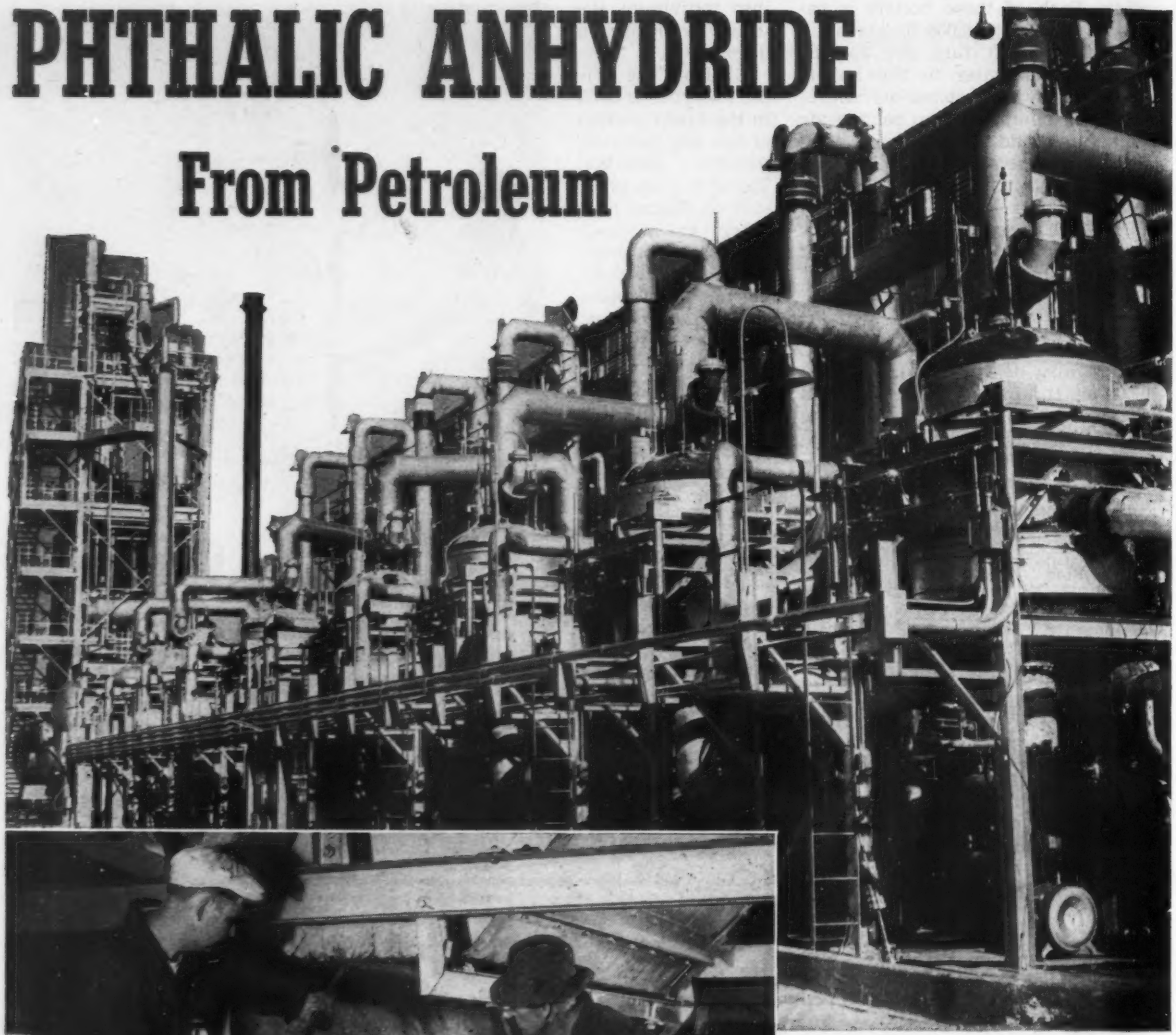
Typical christmas tree on distillate wells handled by McCarthy plant. Depths vary from 7,400 to 10,500 ft. The distillate production is 55 million cubic feet per day

left corner), this flow chart describes the principal processing through to final products



PHTHALIC ANHYDRIDE

From Petroleum



Above: Phthalic anhydride plant at Richmond, Calif. Distillation columns in left background; converters center and right. Building behind converters houses condensers. Left: Dumping solidified product from condensers prior to distilling it

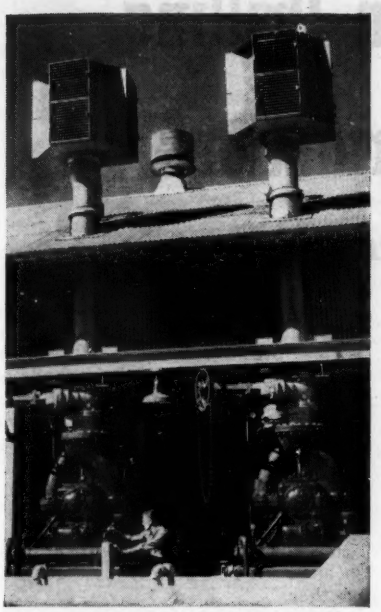
by Fabian R. Staley

STANDARD OIL CO. of California's million-dollar plant at Richmond, Calif., to make phthalic anhydride for Oronite Chemical Co., a subsidiary, has been completed and production is moving steadily toward full capacity. This plant is the only one in the world making phthalic anhydride from petroleum; all other plants (none west of the Mississippi) use naphthalene from coal tar.

Phthalic anhydride is a chemical raw material which has opened a wide new field among the uses of petroleum products. The chemical is a basic ingredient for new paints of remarkable durability; dyes for textiles and leathers; as a plasticizer in plastics and synthetic rubber; in laminates for woods; adhesives for safety glass; insect repellents; in the manufacture of some 50 chemicals, and to some extent in pharmaceuticals.

Standard of California's process makes phthalic anhydride from orthoxylene, a product manufactured from crude oil by operations in other parts of the refinery. This xylene is vaporized and mixed with air at high temperatures, and the mixture is fed to a multiple-tube converter where the formation of phthalic anhydride takes place.

In the formation of the product considerable heat is developed. This heat must be quickly removed to prevent overheating and possible explosions or fires in the equipment. The heat is removed by circulating a liquid around the tubes in the converter and then passing this cooling medium through a boiler where steam is produced. The production of steam



View showing the 7,600-r.p.m. compressors at the Standard Oil Co. of California phthalic anhydride plant at Richmond

cools the liquid, which is then returned to the converter where it becomes reheated in the course of the manufacture of additional phthalic anhydride.

Some idea can be obtained of the sensitive control required in the operation, since the conversion of xylene to phthalic anhydride takes place in less than one-tenth of a second.

The crude phthalic anhydride thus produced, together with the air accompanying it, enters a series of five condensers. The phthalic anhydride vapors are cooled and the crude product deposits on the condenser sides. The air supplied for this part of the process is obtained through two compressors in parallel, running at a speed of 7,600 r.p.m. The xylene is fed by accurately controlled gear pumps.

The deposit of phthalic anhydride in the condensers is quite spectacular in appearance. It forms in long, straw-like crystals ranging in color from tan to white, with a sheen similar to spun glass. The crystals are dropped periodically into carts adapted for the purpose and dumped into tanks set into the ground, where the product is liquefied with closed steam coils. It is then pumped as a liquid to two stills in series for purification by fractionating out the undesirable impurities. The anhydride so produced is practically 100 per cent pure.

The pure product is stored in aluminum tankage to protect it from contamination and then flaked to a solid in water-cooled stainless steel drums. A knife shaves the white flakes off the drums, from which they drop into an automatic weighing machine for packaging.

For Safety—Use Safety Factor

by Henry W. Boggess*

OIL-FIELD jobs that entail the use of heavy equipment and tools, particularly chains, hoists, lines, levers, jacks, dollies, skids, stationary supports, etc., are hazardous and it is therefore imperative that consideration be given to a factor of safety.

A factor of safety may be best described as ratio of ultimate stress to allowable or permissible stress.

The formula for determining a factor of safety is:

$$\frac{\text{Ultimate strength of equipment part}}{\text{Allowable stress (maximum load)}}$$

*Superintendent safety, Sinclair Prairie Oil Co.

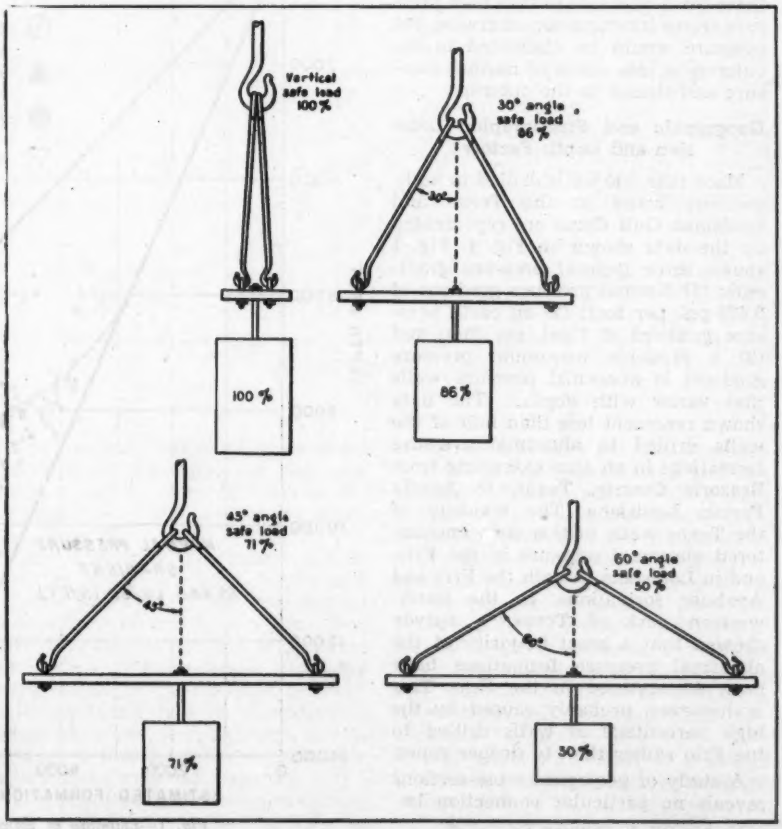
SAFE field PRACTICES

Example.—The ultimate strength of a chain may be rated by the manufacturer as 15,000 lb. Suppose this chain will be used to lift a compressor weighing 5,000 lb. To determine whether the chain has a sufficient factor of safety for the job, divide the known ultimate strength of the chain (15,000 lb.) by the maximum load of the compressor (5,000 lb.). The answer is 3, which is the factor of safety.

Any time a job requires the handling and moving of heavy machinery or materials, it is important that strengths of equipment used in handling such items be known and that these strengths have proper relationship to known weights of such machinery or materials.

Many types of jobs will require high factors of safety (perhaps factors as high as 20), particularly "live" loads or loads subject to shock. No load, even a static one, should be handled where factor of safety is less than 3.

The factor of safety for lines and chains used in hoisting operations may be materially increased by the proper use of slings as is illustrated by accompanying drawings.



Note decrease in vertical safe load-carrying capacity as suspension angle increases

Problems Encountered in Drilling Abnormal Pressure Formations

by E. Cannon and R. S. Sullins**

ABNORMALLY high formation pressures in Texas and Louisiana, in general, are usually encountered in wells drilled along the coast of the Gulf of Mexico, in a belt 35 to 75 miles wide. There are numerous exceptions, however, and abnormally high formation pressures have been encountered in sections of East and West Texas and North Louisiana.

Most credible theory as to the cause for abnormally high pressures over deep-seated domes is the incompetence of formations to bear the overburden without compaction, coupled with a complete or partial seal of the formation. The packing of the formation results in a reduction of volume of fluids carried in the pore spaces and, if there is no escape, there is a consequent increase in pressure. The seal against escape of this pressure may be caused either by deposition or faulting. The conclusion that there must be a seal to trap high pressure seems inescapable; otherwise, the pressure would be dissipated to the outcrop or into zones of normal pressure and thence to the outcrop.

This article, presented May 18 at the Shreveport meeting of the Southwestern Production District of A.P.I., gives data on more than 100 wells in Texas and Louisiana which had abnormally high formation pressures. Drilling problems and various factors that have been found helpful are discussed.

Geographic and Stratigraphic Location and Depth Factors

More than 100 wells drilled to high-pressure zones in the Texas and Louisiana Gulf Coast are represented by the data shown on Fig. 1. Fig. 1 shows three general pressure gradients: (1) Normal pressure gradient of 0.465 psi. per foot; (2) an earth pressure gradient of 1 psi. per foot; and (3) a probable maximum pressure gradient in abnormal pressure wells that varies with depth. The data shown represent less than half of the wells drilled to abnormal pressure formations in an area extending from Brazoria County, Texas, to Acadia Parish, Louisiana. The majority of the Texas wells in this strip encountered abnormal pressure in the Frio, and in Louisiana in both the Frio and Anahuac formations. In the southwestern part of Texas, a survey showed that a great majority of the abnormal pressure formations have been encountered in the Frio. This is, however, probably caused by the high percentage of wells drilled to the Frio rather than to deeper zones.

A study of geological cross-sections reveals no particular connection between geological stratigraphic locations and abnormal pressures, the abnormality apparently being a function of depth regardless of geologic age of the formation. High pressures may occur in one area, only a short distance from another area along the strike where the same formations contain normal pressures. For example, high pressures occur in the Frio sands at 9,000 to 10,000 ft. at Halls Bayou, Alta Loma, and Dickinson, while these same sands carry normal pressures at depths below 11,000 ft. in Red Fish Reef field in Galveston Bay. The difference is attributed, no doubt, to the depositional and faulting characteristics which imprison pressures in one area and permit dissipation in another.

Referring again to Fig. 1, the maximum gradient shows that abnormal pressures may be expected to be first encountered at 7,000 ft. and that mud weight may have to be gradually increased to a maximum value at a depth of 10,000 ft. This gradient also

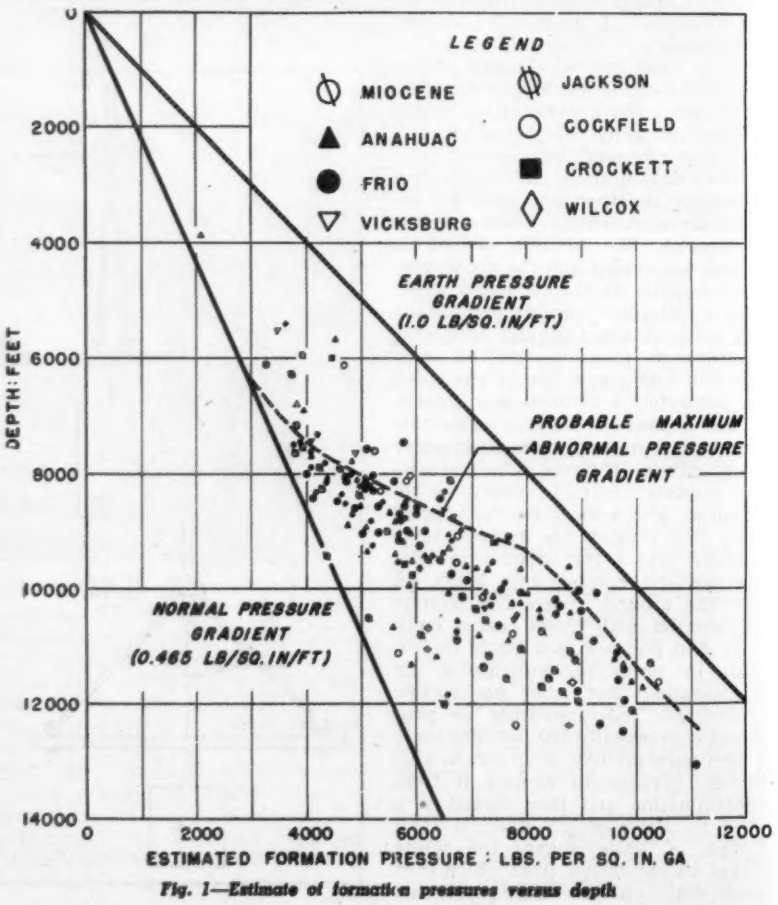


Fig. 1—Estimate of formation pressures versus depth

*Humble Oil & Refining Co.

indicates that 17.3-lb.-per-gal. mud will balance the maximum expected pressure. It may be necessary to use a mud weighing 18 lb. per gal. or heavier to provide an adequate safety factor to allow for gas cutting while drilling and for swabbing tendencies while drill pipe is being hoisted.

Cost of penetrating high-pressure formations has been exceedingly high. More money has been spent in discovering and developing high-pressure formations than has been realized in production from such formations. There are several producing oil fields and gas-condensate fields in high-pressure formations; however, a large majority of the high-pressure formations have contained only salt water and its dissolved gas.

Drilling Problems

One method now used in drilling abnormal pressure wells is to set about 3,000 ft. of 13⅜-in. casing, drill to approximately 10,000 ft., or less if high pressure prevents obtaining this depth, and set 9⅝-in. casing. The hole is then drilled to the projected depth if no heavier than 17-lb.-per-gal. mud is necessary to counteract the formation pressure. As the necessary mud weight approaches the overburden weight the chances of lost returns are increased immensely. Many wells have been abandoned before reaching the desired depth because of the extremely close balance frequently required between back flow and lost returns. It is questionable whether additional strings of casing set to increasingly greater depths will be of any appreciable benefit in stopping lost returns where mud weights closely approaching the overburden weight are being employed. However, it is believed that the adoption of such a program on several wells would be justified on a trial basis to determine the merits of such a casing program.

Sealing agents, such as cane pulp and chopped Cellophane, have been widely used to combat lost returns of normal weight mud when extremely porous formations, such as gravel beds, are being penetrated. Use of bulky materials with high weight muds to combat lost returns has been limited and the results obtained have been far from satisfactory. The mechanics of lost returns in the two cases mentioned are somewhat different. The extremely porous formation receives mud into the large pore spaces and fissures already existing, whereas the relatively heavy mud opens its own horizontal fissures in the bedding plane between formation or other zones of local weakness, because the extreme pressure applied by the heavy mud lifts the overburden and permits the mud to enter the fissure formed, in much the same manner cement enters in a squeeze-cementing job.

Application of cement to zones of local weakness has been very successful in regaining lost circulation where heavy muds are employed. In some wells, however, it is difficult to determine the exact position to place the cement.

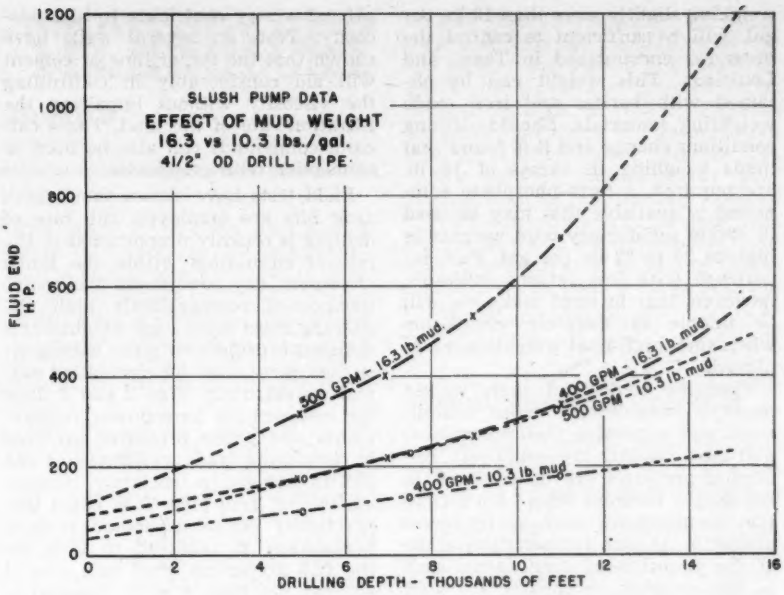


Fig. 2

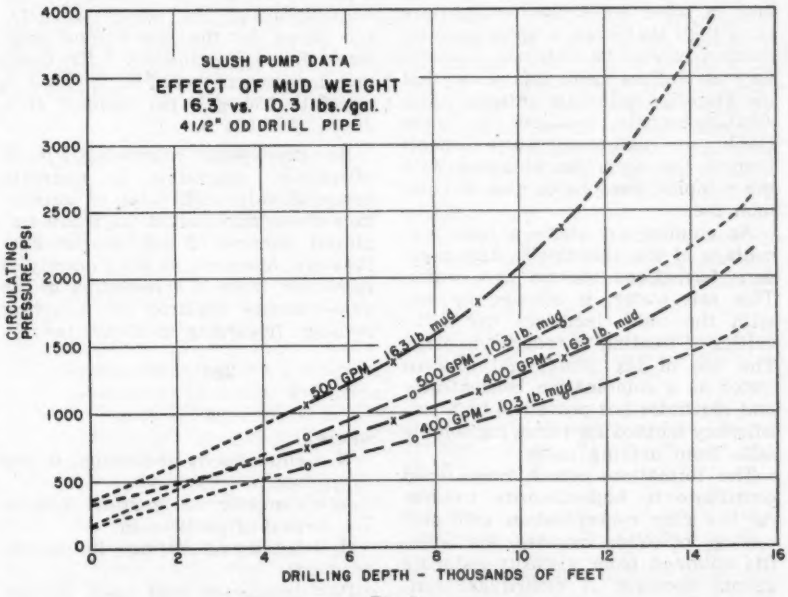


Fig. 3

One important fact stands out in most of the heavy mud jobs where returns are lost. If the viscosity is low and circulation is at a very slow rate, it is usually possible to maintain circulation. This indicates that the friction lost in the annulus between drill pipe and hole is considerably larger than has been expected and is a subject that deserves considerable attention by research groups.

The problem of obtaining relatively high weight muds is not serious. In most cases the cost of maintaining a high weight mud over long periods is considerably greater than the initial cost of preparation. This is particularly true where abnormally high formation pressures are encountered in formations that make considerable mud. In most wells it is the practice to discard the extra mud from the slush pit. A centrifugal concentrator can be used to separate the heavy weighting material from the clay, before the clay fraction is discarded. The routine use of a centrifugal concentrator in connection with high weight muds will result in a saving of 3 to 5 tons of weighting material a day.

Abnormal pressure data that have been accumulated indicate a mud

weighing slightly more than 18 lb. per gal. will be sufficient to control the pressures encountered in Texas and Louisiana. This weight can be obtained with barites and iron oxide weighting materials. Should drilling conditions change and it is found that muds weighing in excess of 18 lb. are required, a ferro-phosphate compound is available that may be used to obtain satisfactory mud weights as high as 20 to 22 lb. per gal. Past experience with lost returns indicates, however, that in most wells we will be unable to maintain circulation when such high mud weights are employed.

Viscosity control of high weight muds is considerably more complicated and expensive than where normal mud weights are employed. Abnormal pressures are encountered in the deeper horizons where the formation temperatures may be in excess of 200° F. At such temperatures, some of the viscosity-reducing agents such as the complex phosphates are very unstable and the viscosity reduction obtained by their use is temporary, and in some wells the temperature is so high that even a temporary reduction cannot be obtained. Laboratory as well as field data show that the viscosity reduction obtained with alkaline-tannate solutions is more stable to high-temperature effects than is the reduction obtained with the complex phosphates now in common use.

As pointed out above a high percentage of the abnormally high-pressure formations contain salt water. This salt water, if allowed to mix with the mud, increases the difficulties of treating to reduce viscosity. The use of the centrifugal concentrator as a combination concentrator and elutriator has proved to be a satisfactory method for removing soluble salts from drilling muds.

The formations which make mud contribute to high-viscosity trouble. As the clay concentration and percentage of solids increase, the benefits obtained from viscosity-reducing agents decrease. A centrifugal concentrator has proven very useful not only in conserving barites but also in reducing the mud treating cost. The amount of water which must be added each day when drilling in formations that make mud, and the consequent barites necessary can be reduced by removing the clay with the centrifugal concentrator or maintaining at any desired concentration.

Frequently in connection with drilling abnormally high formation pressures, it is desirable to reduce the filtration rate of the mud by the addition of starches and vegetable gums. The addition of these materials usually increases the viscosity of the mud. In some cases, the mud is maintained at a relatively high pH to prevent fermentation of the additive. With some muds the maintenance of a high pH value may contribute to high viscosity. Tests on several wells have shown that the use of lime or cement will aid considerably in controlling the viscosity without impairing the filtration rate of the mud. These calcium compounds can also be used in connection with germicides.

Field tests have shown that where drag bits are employed, the rate of drilling is roughly proportional to the rate of circulation within the limits of present day equipment. The maintenance of comparatively high circulating rates using high weight muds requires considerably more horsepower than is required for circulating normal weight muds. Figs. 2 and 3 show the comparative horsepower requirements and pump pressures involved in circulating muds weighing 10.3 and 16.3 lb. per gal., respectively, through 4½-in. o.d. drill pipe. It is noted that practically the same amount of fluid horsepower is required to circulate the 16.3-lb.-per-gal. mud at a rate of 400 gal. per minute as is required to circulate the 10.3-lb.-per-gal. mud at a rate of 500 gal. per minute. An extrapolation of the 500-gal.-per minute curve for the heavy mud indicates that approximately 1,200 fluid-end horsepower would be required to circulate 500 gal. per minute at a depth of 15,000 ft.

As previously mentioned, it is oftentimes impossible to maintain comparatively high rates of circulation when high weight muds are employed, because of lost returns. Fortunately, however, as mud density is increased, there is a reduction in the mud velocity required for removing cuttings. According to Stokes law:

$$V = \frac{2gd^2}{36} \frac{(P_1 - P_2)}{u}$$

where

V = slip velocity of cuttings, ft. per sec.
d = diameter or greatest dimension of particle, in.
P_1 = density of cuttings, lb. per cu. ft.
P_2 = density of mud used, lb. per cu. ft.
u = apparent viscosity of mud (Reynolds — 0.000672 × centipoises viscosity)

It can be seen that the slip velocity will vary directly as the difference in weight of cuttings and mud and inversely as the viscosity u. Thus, the mud velocity needed to remove cuttings will be reduced in proportion to the increase in mud weight and the increase in viscosity. An increase in mud weight of from 10 to 16 lb. per gal. will reduce the slip velocity to 29 per cent of that of a 10-lb.-per-gal. mud. This is considering only the change in density, and the actual viscosity of the weighted mud will be much higher than the viscosity of the original mud, which will result in the slippage being further reduced. Doubling the viscosity will cut the slip velocity in half.

Conclusions

The most important problem in connection with the drilling of abnormally high formation pressures is the prevention of lost returns. Methods that can be successfully employed in one area may not be applicable in another; however, several possible solutions to the problem are presented which are:

1. Careful control of the circulating rate. This also involves careful control of mud weight.
2. The use of very deep protective strings of casing.
3. Cementing zones of local weakness.
4. Use of sealing agents.

Controlling the physical and chemical properties of a relatively high weight mud is complicated and more expensive than when dealing with normal mud weights. Methods are available for obtaining almost any desirable mud property. Careful planning of the mud program and the use of every available means for conserving materials will result in a considerable reduction in mud costs, as well as more efficient operations.

"Impurities" Promote Catalytic Isomerization

ISOMERIZATION processes could not have been operated successfully in the war without the impurities olefins, air and water, so say Universal Oil Products Co. research chemists.

Revealing their discoveries of some years ago, in two papers, before American Chemical Society in Atlantic City, Dr. Herman Pines and R. C. Wackher pointed out that impurities in butane and pentane, and in the catalysts with which they were treated, were responsible for the success of the isomerization process. Referring to isomerization as one of three processes contributing to the success of the wartime aviation-gasoline-production program, the research chemists went on to outline its importance in the war program. Catalytic cracking, which supplied the base stock, and the alkylation process, which supplied approximately 40 per cent of the components of all 100-octane gasoline produced in the war program, were given as the other two processes responsible for the program's success.

Going back to the discovery, of Professor Ipatieff and Dr. Pines, upon which hydrogen fluoride or sulfuric acid catalytic alkylation processes are based, the papers relate some of the high-lights leading up to the present-day process.

QUESTIONS on TECHNOLOGY

by W. L. Nelson
Consulting Engineer

Odor and Explosive Limits Of Gasoline

When an odor of gas is evident around gasoline and fuel oil is the air explosive?—P.R.C.

Fortunately our sense of smell can detect gasoline vapor in extremely small amounts, amounts far lower than the lower explosive limits of air-gasoline vapor mixtures. Although the explosive limits of kerosene and fuel oil are lower than for gasoline, they are not more dangerous because they are so nonvolatile at ordinary temperatures that there is little possibility of forming an explosive mixture. Of course, if kerosene is poured over warm kindling in a stove an explosive mixture can be formed.

Data of the U. S. Bureau of Mines and other sources was utilized in arranging the following tabulation:

	Per cent in air
Lower explosive limit—gasoline	1.4
Lower explosive limit—kerosene	1.1
Lower explosive limit—fuel oil	0.7
Gasoline-air vapor—	
Dizziness after 10-12 breaths	2.2-2.6
Dizziness after 3 minutes	1.13-2.22
Dizziness after 14.5 minutes	0.7-0.28
Odor can be identified	0.03

Inflammability and Explosive Limits

We notice the terms "inflammability limits" and "explosive limits." What is the difference between them? —C.M.M.

Inflammability limit and explosive limit are the same, although the preferred usage is explosive limit. Mixtures of gas and air outside the explosive limits of composition will neither burn or explode. Of course, a "too-rich" mixture will burn as fast as oxygen (or air) becomes available to it, and a "too-lean" mixture will burn as additional gas becomes available to it.

The term explosive limits is preferred because it is normally presumed that a gas mixture is uniform throughout and that the entire volume of the mixture consists of material whose composition lies within the explosive limits. Such a mixture always explodes; it does not burn. The phenomenon of the quiet and regular rate of combustion which we refer to as burning, can only occur if one of the components surrounds the other so that inflammable mixtures occur at only the interface between the two gases. The rate of formation of inflammable mixture at the surface occurs so uniformly that the flame simply consumes the inflammable mixture as fast as it is formed, and thus no large amount of inflammable mixture can accumulate at any time.

Had the question referred to "inflammable material" rather than "inflammability limit" the answer would have been different. Any material that will burn with air is spoken of as inflammable. As the vapor (or fine spray) of an inflammable material mixes with the air it burns, and the composition of the air-fuel mixture is of little consequence except that if the composition lies between the explosive limits the mixture can explode or burn throughout its entire volume in only a fraction of a second of time.

Definition of Distillate

What is the definition of the name "distillate"? We find it used all sorts of ways.—F.A.S.

From a dictionary or general standpoint "distillate" can be used to describe almost any material that has been produced by a process of distillation. However, such a definition is of little value because the term distillate has specific meanings in the oil industry—not one meaning but several meanings.

The most common usage is with respect to light or low-boiling distilled fuel oils. The lightest of such materials are much like kerosene in their boiling range and are frequently called "light distillates." In market quotations light distillates are often considered to be the No. 1 or volatile domestic fuel oil of the American Society for Testing Materials. "Heavy distillates" are higher boiling and are usually thought of as the No. 2 and No. 3 A.S.T.M. fuel oils. The terms "light" and "heavy" distillate, when applied to cracking-plant products, may not conform to the A.S.T.M. numbers just mentioned. If the distillate is to be used in tractors it may be called tractor distillate although the term tractor fuel oil is probably a better name. Likewise, if the distillate exhibits proper ignition qualities it may be used in diesel engines and may be called diesel distillate or better diesel fuel oil.

In topping operations one of the heaviest materials distilled is called wax or paraffin distillate. After the wax distillate has been filtered for the removal of wax in a filter-press, the material may be referred to as pressed distillate. Likewise, in cracking-plant operations the gasoline-like product is often called pressure distillate probably because of the pressure utilized in the cracking process.

From the above it is obvious that no single definition is possible, and that something must be known of the use, etc., to be able to know what is meant by the use of the term distillate.

Noninflammable Solvents

What will make a petroleum solvent noninflammable? Can you direct us to a manufacturer?—F.R.R.

Chlorinated hydrocarbons compounds are the main noninflammable solvents. Among these are chloroform, dichlorethylene, and trichlorthylene. Carbon tetrachloride is the most common one. The behavior of gasoline or petroleum solvents to which carbon tetrachloride has been added, has been studied by the U. S. Bureau of Mines in Information Circular 6805 (1934), Jones & Kennedy, "Explosion Hazards of Hydrocarbon-Carbon Tetrachloride Mixtures," and Bulletin 279, Coward & Jones, "Limits of Inflammability for Gases and Vapors."

The amount of carbon tetrachloride required is quite large. The percentages by liquid volume are indicated by Table 1.

Table 1—Minimum Percentage Carbon Tetrachloride in Noninflammable Hydrocarbon Mixtures

Material—	Vaporized	At liquid surface	At wick
Pentane	67	80	70
Hexane	70	63.5	67
Heptane	70	50	58
Octane	67	50	67
Naphtha	70	50	58
Gasoline	68	50	58

The first column, labeled vaporized, refers to vapors at room temperature, the second column refers to a case in which a flame is passed over the surface of the blend for an instant, and the third column shows the percentage required when a flame is presented to the end of a wick that dips into the liquid.

Obviously the kind of naphtha, particularly its volatility, affects the situation. This is indicated in Table 2 for four boiling ranges of naphtha.

Table 2—Amount Carbon Tetrachloride for Naphthas

Material	Distillation Range, °F.	A.P.I. gravity	% carbon tetrachloride*
1	248-356	55.2	30
2	176-284	63.7	45
3	122-239	71.2	50
4	122-230	76.3	70

*To produce a solvent "reasonably safe from fire hazard."

Use of OIL-BASE MUD

At Elk Hills Naval Reserve No. 1

This article describes one of the wartime development projects in California, concerned with coring, core analysis, and completions. It was presented as a paper at the Southwestern district meeting of the A.P.I. division of production, Shreveport, May 18.

by R. W. Stuart*

DURING the wartime development of Elk Hills Naval Petroleum Reserve No. 1 a program was initiated for obtaining comprehensive reservoir data. First step in this program was the selection of representative wells throughout the field for coring the producing sands. Since the field was badly faulted and there were numerous producing sands, it was necessary to core a large number of wells.

The first coring was done with natural water-base muds. Approximately 50 wells were cored, utilizing muds of the lowest possible fluid loss. The resulting core-analysis data were very erratic, indicating a large amount of flushing from the mud. The saturation and salinity inconsistencies in these data gave doubtful values for estimating reserves.

Due to this undesirable flushing, it was decided to use low-fluid-loss starch muds and approximately 30 wells throughout the field were cored with such muds, having fluid losses of 1 to 2 cc. by the A.P.I. method. The resulting core analyses showed more than the permissible amount of flushing.

After consulting the Bureau of Mines on their methods of obtaining the most accurate core analyses, it was decided to core with oil-base mud. Approximately 15 wells were cored through the producing sands with oil-base mud and excellent core recovery was experienced. In order to obtain accurate checks on the cores drilled with oil-base muds, the Bureau of Mines moved in a core-analysis laboratory.

*Stanolind Oil & Gas Co.

Oil-Base-Mud Characteristics and Handling

The two commercial oil-base muds which are now available were tested and found to have similar characteristics but different controlling features. The methods for controlling these muds have been the deciding factor in their success or failure on many wells.

One of these commercial oil-base muds is composed of diesel oil, blown asphalt, sodium chloride, caustic soda, sodium silicate, and tall oil as the active ingredients with crushed limestone as the weighting material. The viscosity and gel of this mud is controlled by the pH, using sodium silicate and tall oil to adjust the pH as desired. This mud forms a viscous emulsion with fresh water; for this reason, great care has to be taken to prevent water contamination. Strong salt water will not interfere with the viscosity control of the mud as much; therefore, salt is used to counteract the effect of an entrained water.

The other commercial oil-base mud is composed of diesel oil, air-blown asphalt, and calcium oxide with ground limestone added for weight. Controlling factors in this mud are obtained at the mixing plant through the use of a diesel oil, having definite characteristics and an air-blown asphalt of a specified nature with the calcium oxide added as a settling inhibitor which also combines with any water in the mud. This mud is affected by water, but additional calcium oxide will take up any excessive volume of water which might be entrained in the mud.

These commercial muds react somewhat the same in a well and both have been used successfully. The mud viscosity varies with changes in temperature, but since it is similar to the viscosity of a true fluid, this is not troublesome. Any viscosity from 60 to 90 seconds A.P.I. is desirable and conditions are unchanged in the drilling operation with variations of viscosity in this range. Fluid loss into this formation is very small and a thin film is plastered on the walls of the hole. Mud weight may be varied to meet drilling conditions and the weighting material is adequately suspended in the mud.

Use of oil-base mud requires special handling. This is necessary in order to minimize expensive mud losses, prevent water entrainment, insure rig cleanliness, and guard against fire hazard.

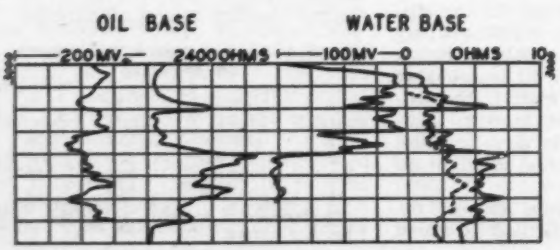
In order adequately to handle oil-base mud it is necessary to install additional equipment at the rig. This includes storage tanks for the oil-base mud, steel mud pits for the circulating system, larger-mesh shale-shaker screens, steel pipe racks with adequate drain, neoprene pump parts, neoprene-lined mud hoses and neoprene pipe wipers.

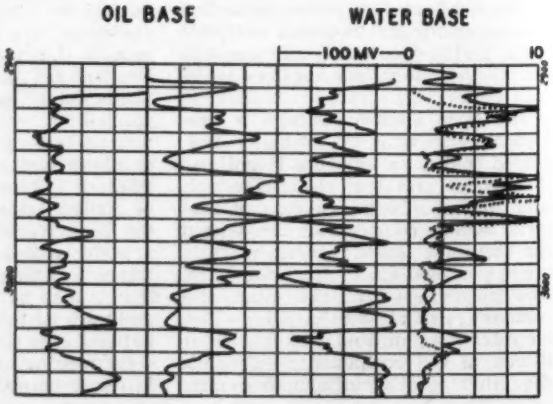
Comparative Analysis of Electric Logs

Electric logs were run in each well after coring with oil-base mud. Due to the high resistivity of this mud, it was necessary to use contact electrodes. These contact electrodes were the knife type, which keep fairly

Fig. 1—(Below) Two electric logs taken of the same well, Elk Hills, Calif.

Fig. 2—(Right) Another comparative set of electric logs from one well, Elk Hills





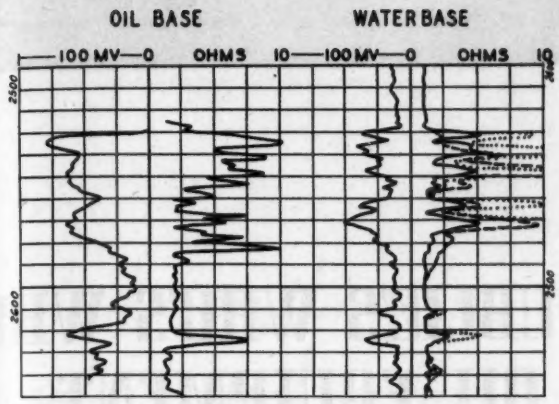


Fig. 3—These electric logs were taken in offsetting wells, Elk Hills

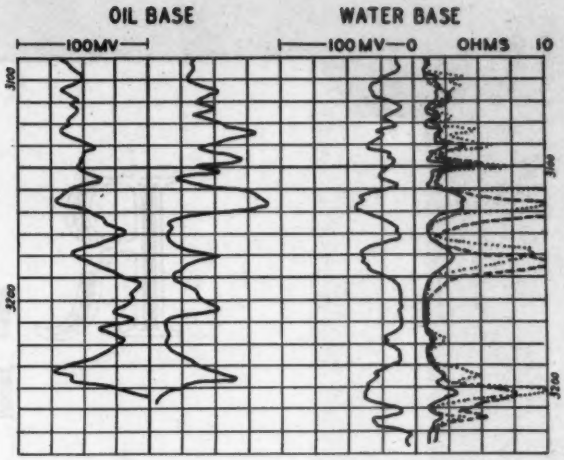


Fig. 4—Another pair of offsetting wells at Elk Hills, one logged through oil-base mud and the other through water-base mud

constant contact with the formation. In order to compare the electric logs on the first two wells cored with oil-base muds, the contact electrode was run and then the oil-base mud was replaced by a bentonite-water mixture and logged with the regular electrode.

Figs. 1 and 2 show comparative results of electric logs run in the same wells, first with oil-base mud, and later with water-bentonite muds. It will be seen that these logs correlate very well, with the resistivity curve showing the formational breaks better than the self potential curve. However, it was found that the resistivity curves could not be used to define the fluid content of the formation.

Figs. 3 and 4 show comparative logs between oil-base-mud wells and offset wells logged with natural mud. These also show that good correlation can be obtained with contact electrode electric logs in oil-base muds, but they cannot be used to determine the gas-oil or oil-water contact. There were found to be some variations in the contact electric log in oil-base mud which were hard to explain. This was believed to have been due to variation in resistance at the point of contact between the electrodes and the formation at the well bore.

Core Analysis Data

The cores were carefully cut with a conventional barrel in oil-base mud, pulled out of the hole without further circulation, and removed from the barrel with a minimum amount of delay. The cores were then examined by representatives of the Bureau of Mines and a commercial core laboratory, each taking 6 in. of every foot of sand recovered. Analysis of these cores was started immediately. Only a representative sample from the center of the core was used to determine the desired data. The permeability, porosity, water, oil, and salinity of each sample were obtained by both analyzers. Since the analyti-

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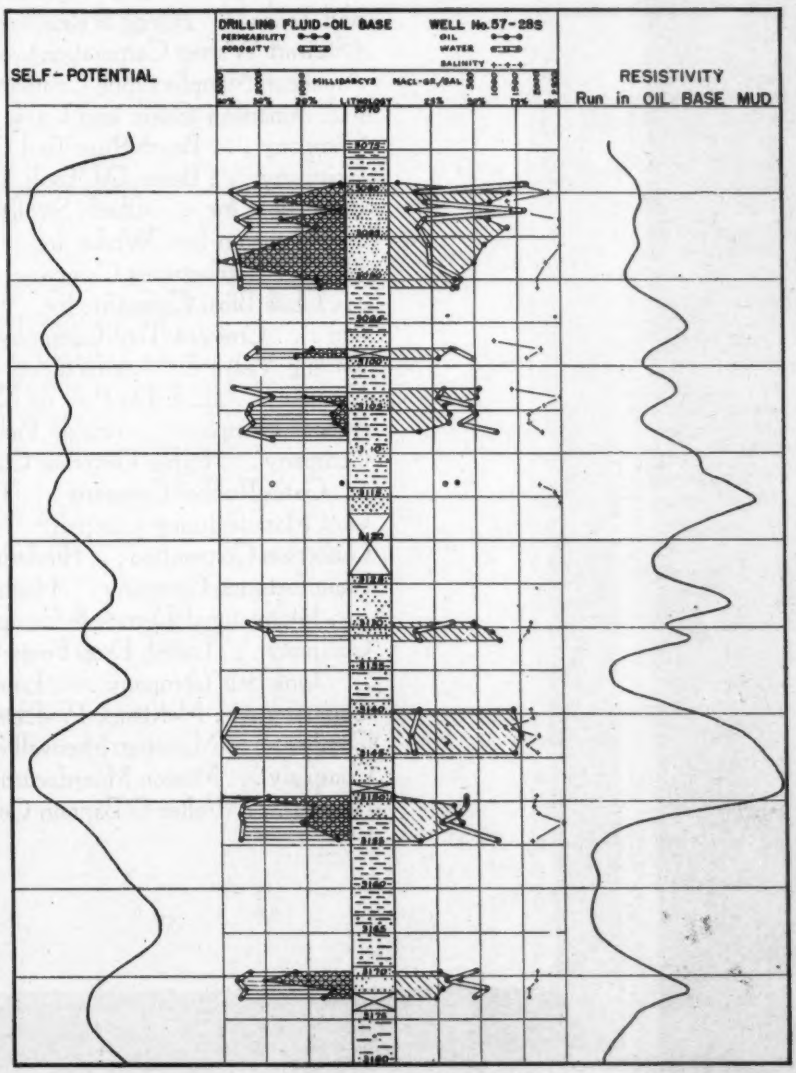

Fig. 5—Composite log of producing formation from a well in the Elk Hills Naval Petroleum Reserve No. 1: Lithology of the cores, electric log, and core-analysis data

REPUBLIC'S WHO'S WHO IN OIL EQUIPMENT

A few of the leading oil equipment manufacturers whose products are available through Republic's 45 sales and service points in Arkansas, Illinois, Indiana, Kansas, Louisiana, Mississippi, New Mexico, Oklahoma and Texas . . . Abegg & Reinhold Company, Ltd. . . . Alemite Division (Stewart Warner Corporation) . . . American Iron & Machine Works . . . American Manufacturing Company . . . American Rolling Mill Company . . . American Chain and Cable Company . . . American Fork & Hoe Company . . . Baash-Ross Tool Company . . . Babcock & Wilcox Tube Company . . . Baker Oil Tools, Inc. . . . Band-It Company . . . Beaver Pipe Tools, Inc. . . . Black, Sivalls & Bryson . . . Byron Jackson Company . . . Cameron Iron Works, Inc. . . . Chain Belt Company . . . Chicago Nipple Manufacturing Company . . . Chicago Pneumatic Tool Company . . . Clark Bros. Company, Inc. . . . Columbus McKinnon Chain Corporation . . . Crescent Tool Company . . . W. H. Curtin & Company . . . Darling Valve & Manufacturing Company . . . Dresser Manufacturing Company . . . E. I. Du Pont de Nemours & Company . . . Henry Disston & Sons Company . . . Eagle Picher Company . . . Fairbanks, Morse & Company . . . Fisher Governor Company . . . Foster Cat Head Company . . . Gates Rubber Company . . . The B. F. Goodrich Company . . . H. P. Gott Manufacturing Company . . . Graybar Electric Company . . . The Guiberson Corporation . . . Hinderliter Tool Company . . . Chas. N. Hough Manufacturing Company . . . Hughes Tool Company . . . Inferno Company . . . International Derrick & Equipment Company . . . The S. M. Jones Company . . . Ladish Drop Forge Company . . . Larkin Packer Company . . . Link-Belt Company . . . Lubrikup Company . . . The Lufkin Rule Company . . . McKissick Products Corporation . . . McNeely Materials Company . . . Manning, Maxwell & Moore, Inc. . . . F. E. Meyers & Bros. Company . . . Mission Manufacturing Company . . . W. C. Norris, Manufacturer . . . Walter O'Bannon Company . . . Oil Center Tool Company

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(Continued from page 129)

cal procedure used by the Bureau of Mines differed from that used by the commercial core laboratory, some very interesting comparisons were made available.

Fig. 5 is a composite log showing the lithology, electric log, and core-analysis data obtained with oil-base mud. As shown by this composite log, the electric log fairly well defines the formation changes, but is valueless in determining fluid content. These core analysis data were very good and are representative of the results obtained from the analysis of the other wells cored with oil-base mud in this field. It may be observed that the sands of low permeability in these cores show high water content and the high-permeability sands in the oil zone show low water saturation. The salinities, which had been used in the previous water-base analysis as an indication of the amount of flushing in the cores, were found to vary considerably throughout the entire section. There did not seem to be any correlation between the other data and the variation in salinity, and it is not known whether this variation was due to actual formational salinity or the inaccuracy of the anlysis.

Comparison of Data

A studied comparison of the core data resulted in the conclusion that the accuracy of the core analysis was exceptionally good, considering the various factors which entered into the analysis. Table 1 compares the results obtained by the Bureau of Mines and a commercial core laboratory on equally divided cores in the same sand section. There is considerable variation between the two sets of data, but the trends are in the same direction and the average of the data is very close. This is as good as might be expected, since the samples varied somewhat throughout the section and the method of analysis is entirely different.

A comparison of these data with a well cored with water-base mud shows considerable flushing and a much lower salinity. Table 2 shows an analysis of an offset well cored with natural muds in the same sand section, and analyzed under the same conditions. A comparison of Tables 1 and 2 shows the permeability and porosity of the sands to be in the same order but the water saturation is much higher and the oil saturation is considerably lower in the cores taken with water base mud. Although the salinities are somewhat lower in the water-base analysis, the variations in salinity are in the same order.

A careful review of these data indicates that use of oil-base mud for core analysis gives a much closer picture of reservoir saturations and

TABLE 1—COMPARATIVE DATA ON CORE ANALYSIS, BUREAU OF MINES VS. COMMERCIAL CORE LABORATORY
Core Analysis Data on Oil-Base Mud, Well 73-6G

	Permeability, md.		Porosity, per cent		Residual oil, per cent		Residual water per cent		NaCl grains per gal.
Depth of sand	Com'l. core lab.	B. of Mines	Com'l. core lab.	B. of Mines	Com'l. core lab.	B. of Mines	Com'l. core lab.	B. of Mines	B. of Mines
2,520	*86	....	*29.6	...	*57.1	...	*18.6	...	...
21	1,040	....	34.7	..	73.9	...	11.8	...	...
23	1,711	3,000	36.5	34.5	72.9	88.4	13.4	13.4	1,940
24	879	3,000	31.7	31.0	68.5	76.4	16.7	19.0	4,140
25	847	3,000	31.4	29.7	58.3	53.2	21.3	26.2	2,740
2,526	1,674	1,800	29.6	29.6	65.3	82.0	16.5	16.6	1,804
27	273	580	30.2	29.5	58.6	50.8	21.9	30.9	1,990
28	1,750	4,800	30.4	29.0	70.0	58.8	15.5	23.5	2,320
29	*35	....	*28.3	*27.8	*27.2	*27.0	*55.2	*58.9	*1,300
30	1,470	4,300	30.3	27.2	62.4	51.4	21.4	34.7	1,730
2,532	1,410	....	28.4	27.9	62.3	58.8	19.7	19.3	1,510
33	1,060	....	29.7	28.0	64.4	73.6	13.5	16.8	1,840
35	675	1,100	30.3	32.2	57.8	57.6	17.8	19.7	1,820
52	*51	*32	*34.4	*35.0	*35.2	*16.4	*49.2	*70.2	*1,660
53	*66	*150	*34.3	*32.2	*29.7	*21.7	*57.1	*68.8	*1,660
2,554	*18	*370	*35.8	*35.4	*42.9	*44.3	*43.4	*44.2	*1,420
Av.	1,161	2,698	30.9	30.1	64.9	65.1	17.2	22.0	2,183

*Figures not included in average.

TABLE 2—WATER-BASE NATURAL MUD, WELL 61-5G

Depth of sand	Permeability, millidarcys	Porosity, per cent	Residual oil, per cent	Residual water, per cent	NaCl grains per gal.
2,637	295	27.8	37.4	47.8	1,229
38	*104	*33.2	*48.5	*29.2	*1,827
42	430	32.0	48.7	36.6	1,567
43	744	34.4	51.3	28.1	2,252
44	802	32.9	54.5	33.8	1,395
2,645	668	31.5	45.5	36.7	1,154
46	1,388	30.7	49.8	38.1	1,500
47	203	34.2	55.5	20.4	3,443
48	220	31.0	42.6	41.0	2,233
51	1,090	28.3	47.3	38.5	991
2,654	290	29.1	13.4	75.6	2,020
55	1,425	30.4	16.4	68.2	1,945
56	680	33.0	27.6	52.3	693
57	4,357	30.8	35.0	41.1	768
58	3,895	35.0	...	...	....
Lost core	....	...	...	...	....
2,670	1,645	35.2	41.2	31.5	....
71	749	34.8	54.6	27.4	2,914
79	9,200	33.4	23.9	46.2	....
80	6,200	34.2	19.3	43.8	841
81	4,060	40.2	40.3	30.1	....
2,682	1,510	41.3	38.3	29.8	609
83	222	38.8	35.8	37.6	....
84	795	31.6	37.3	33.4	2,000
85	388	32.5	21.9	37.8	....
86	110	34.4	39.9	35.8	1,625
2,687	418	32.7	42.5	32.1	....
88	*67	*37.3	*36.7	*41.6	*1,933
Average	1,669	33.2	38.3	39.7	1,633

*Figures not included in average. (All above tests by commercial core laboratory.)

TABLE 3—PRODUCTION DATA, OIL-BASE MUD VS. WATER-BASE MUD

Water-base mud—	Oil production tests (B/D)				Static bottom-hole pressure, psi.	Sand thickness (ft.)	Producing formation	Productivity index
Date tested	1-30-45	2-9-45	2-19-45	8-20-45				
Well 38-29S	*522	595	578	133	564	24	Sub-Scalez No. 2 Malinia	0.90
Oil-base mud—								
Date tested	2-24-45	3-1-45	3-8-45	8-20-45				
Well 48-29S	*944	939	830	251	455	26	Sub-Scalez No. 2 Malinia	4.65
Water-base mud—								
Date tested	7-18-45	7-28-45	8-9-45	8-21-45				
Well 47-1G	*88	85	106	65	110	31	Sub-Scalez No. 1	0.98
Oil-base mud—								
Date tested	5-22-45	6-1-45	6-11-45	8-20-45				
Well 38-1G	*374	330	369	423	136	35	Sub-Scalez No. 1	7.5

*Initial test.

salinities, but proved not especially beneficial for porosity and permeability determination.

Completions of the wells with oil-base mud were very simple and extremely satisfactory in most cases. The usual completion procedure in this field with natural muds was to change mud to water and bail or swab the well until it had cleaned up. However, with oil-base mud, it was not necessary to either bail or swab and the wells came in immediately making pipe-line oil.

Comparative production data are shown in Table 3 for offset wells drilled with natural mud and oil-base mud in the same sand section. Production tests were run initially when the well was completed and continued until the wells were shut in at the end of the war. It will be noted that one comparison of offset wells showed, for the oil-base completion, higher intial production and a higher productivity index, although the bottom-hole pressure was 109 psi. lower. The other offset test showed, for the oil-base completion, higher initial production which had increased up to the time the well was shut in while the productivity index was 7.5 for the oil base against 0.9 for the natural-mud completion.

Insufficient data have been collected in this field definitely to state that these initial increases will be sustained over the life of the well.

Conclusion

It is believed the use of oil-base mud in these wells proved that this mud has a definite place in drilling, coring and completing certain wells.

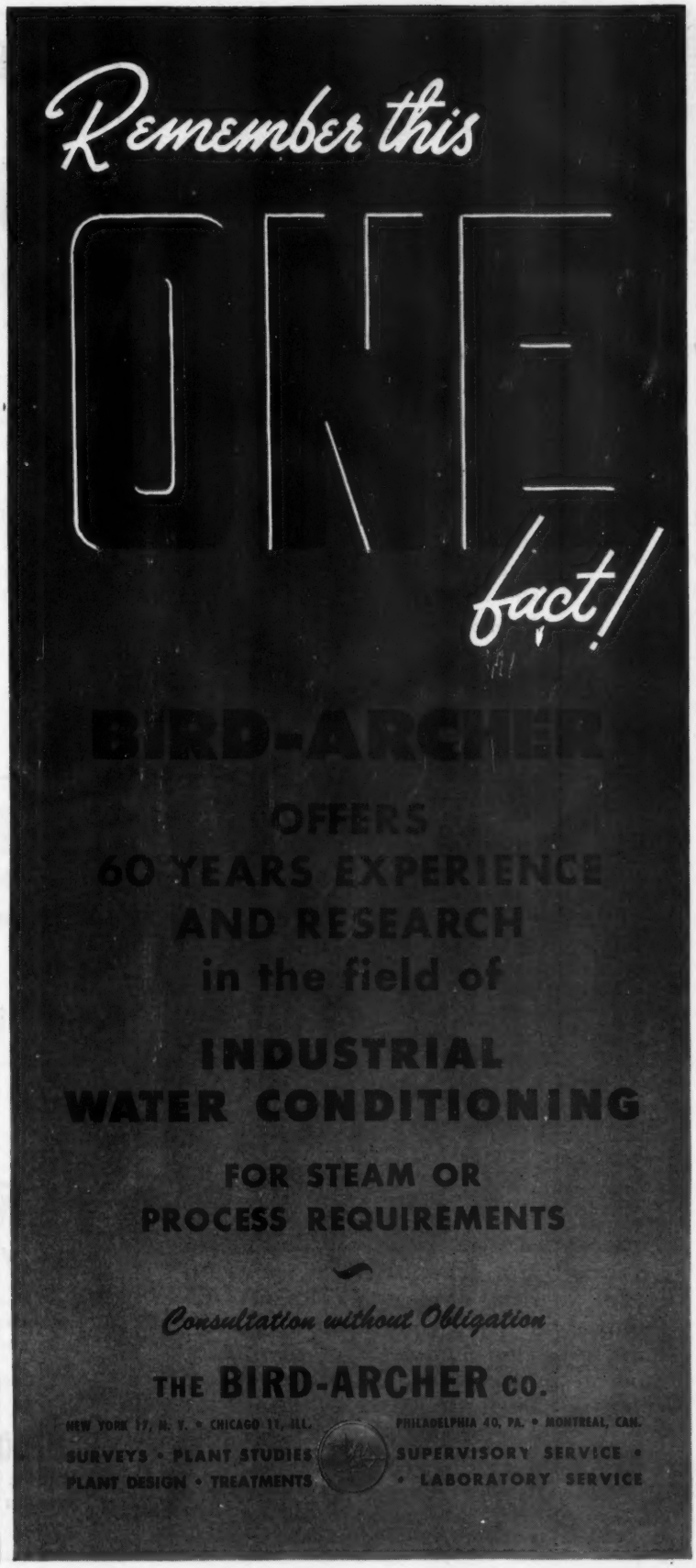
During the drilling operations it is found that, with careful supervision, oil-base mud is no more trouble and does not present any greater problem than the use of natural mud in the same area.

Oil-base mud in conjunction with certain plastic tracers soluble in oil but not in water, such as have been developed by Shell Oil Co., Inc., will probably give the most accurate core analysis data obtainable at the present time.

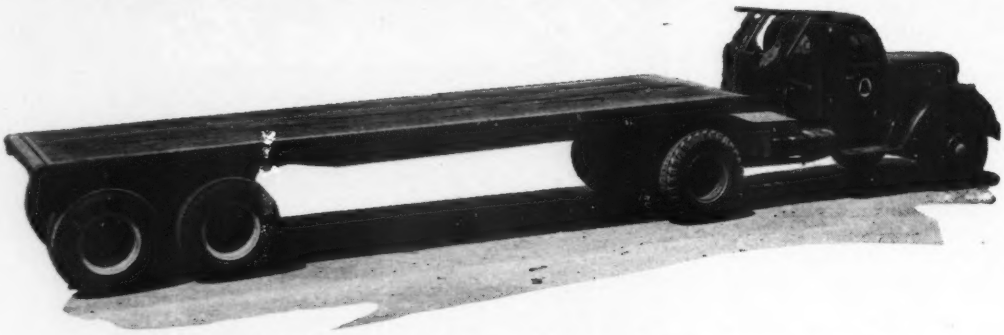
In low-pressure, or low-permeability sands, and sands containing bentonitic material, the use of oil-base mud in completions will be a definite benefit.

Although it was necessary to drill and complete the wells at Elk Hills during the wartime emergency in a minimum of time, and with a minimum of testing, it is believed that the core-analysis data obtained from these wells using oil-base mud, made possible a more thorough and accurate knowledge of reserves and reservoir characteristics necessary for the best future reservoir control.

Stanolind Oil & Gas Co.'s producing department has made a thorough study of oil-base mud drilling. A well



A RUGGED-DUTY OIL FIELD TRAILER



Our Model S-F 42-T tandem platform, illustrated above, is constructed to handle the extreme load weights common to oil field hauling.

Embodying three-point suspension, this trailer distributes load weights evenly over the tandem axle assembly. Construction of frame at center and sides is specially engineered to withstand the stress of maximum loads. The roll type tail board permits rear loading.

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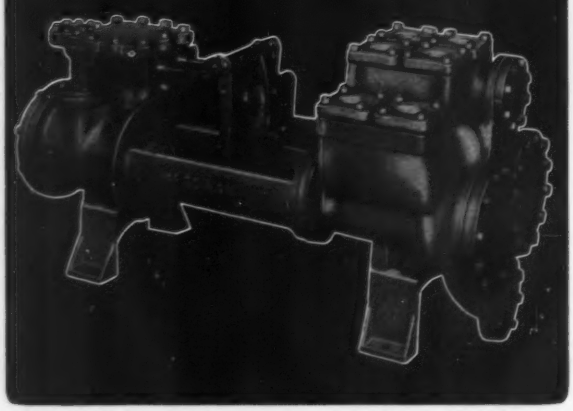

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(A)

in the North Katy field, Texas, has just been completed, coring through two oil sands with oil-base mud. Electric logs were made by the two well-known services. Gamma ray and neutron logs were also run, both before and after cementing. Caliper logs and temperature surveys were made.

The hole-caliper survey showed not more than 1 in. over gage at any point and the various other logs correlated closely with the core data, to show formational breaks with a doubtful fluid definition.

Some flushing was found in the cores, but the water saturation values determined by core analysis, correlated surprisingly well with capillary pressure-saturation tests, indicating accurate connate water figures in the oil zone.

New Gulf Coast Gasoline Plant

(Continued from page 117

vent and reabsorber consist of a large-diameter lower section and a small diameter upper section. Rich oil from intermediate pressure vent is introduced at the top of the lower section of the low-pressure vent. At the entrance to the vent a flash takes place and the rich oil absorbs vent ethane and propane from the rich low-pressure vent gas which is introduced at the bottom of the lower section. The flashed gas is stripped of butane and propane by a lean oil stream introduced at the top of the upper section. The designers point out that the arrangements of the oil and gas flow in the 450-psi. absorber and the low-pressure vent achieve high propane recovery with an economical oil circulation.

Absorption oil having a 42° gravity for both absorbers is pumped from a surge tank by three lean-oil pumps. Oil for the 825-lb. absorber is further raised in pressure by two booster pumps in series with the primary lean-oil pumps.

After being heated to 450° F., the rich oil from the last vent tower is stripped of raw gasoline in a 20-tray still. The hot lean oil, after being cooled, flows to the surge tank. Raw gasoline is charged to an ethane tower through two 14-stage vertical centrifugal pumps operating at 550-psi. pressure. The deethanized product enters a propane tower, and commercial propane is produced as an overhead liquid product. Motor fuel or stabilized natural gasoline can be produced as a bottom product from the butane tower. Overhead butanes can be further split in an isobutane tower.

The high-pressure condensate gas, after two-stage flashing, goes to storage and from here it is pumped to five stills. A gasoline stream is produced as an overhead product and naphtha and kerosene streams can be produced as side-stream products.

Disposition of Residue

The residue gas from the plant amounts to approximately 85 million cubic feet daily. Approximately 3,700,000 cu. ft. daily is required as fuel, and the remainder is sold at all times. Any variation in outside requirements for residue is met by regulating production from the distillate wells.

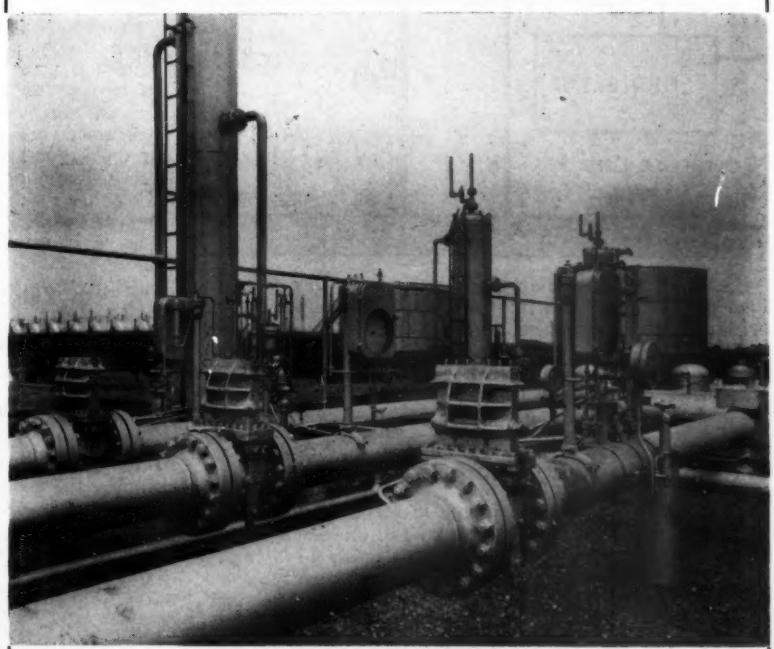
Two 10-in. high-pressure residue lines from the plant were laid by J. R. Horrigan Construction Co. under supervision of D. G. Harman. One 10-in. line goes to Port Neches where it hooks into a line from West Beaumont and Port Arthur. The other high-pressure line runs to Beaumont and also hooks into the Port Arthur-West Beaumont line. There is also a 12¾-in. line from Beaumont to Orange.

To meet future increase in residue output from the plant, three 12¾-in. and two 10-in. lines were used in making the Neches River crossing, at a cost of $55,000.

Residue gas from the plant goes to the industrial area of Port Arthur; Neches Butane Co., Neches; Beaumont Natural Gas Co., Beaumont; E. I. Du Pont de Nemours & Co.'s nylon salt plant at Orange; and the Gulf States power plant at Beaumont.

Another - - - - -

DANIEL INSTALLATION



DANIEL SENIOR FITTINGS installed in a large Gasoline Absorption Plant.

DANIEL ORIFICE FITTINGS provide the answer to orifice plate changing under pressure and an improved and simplified means to orifice meter measuring. DANIEL ORIFICE FITTINGS are of extremely rugged construction to provide extra long, trouble free operation. Available in a wide range of sizes and types to meet any orifice meter measuring requirement. Other DANIEL products: Junior Orifice Fittings, Orifice Plates, Piston Type Check Valves, Meter Tubes and Flanges, Straightening Vanes, etc. Let the Daniel Engineers help solve your Orifice metering problem.

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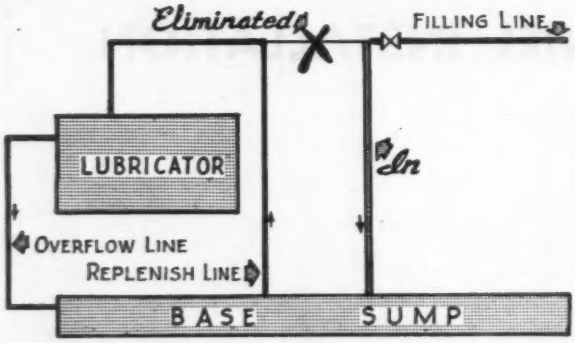
PLANT PRACTICES

Line for Withdrawing Air from Bottoms Pump

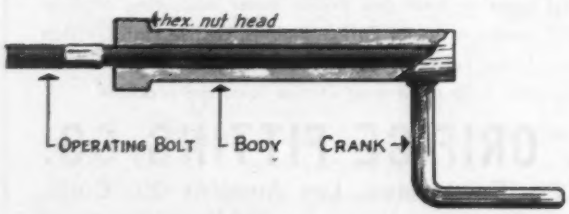
WHEN a pump handling liquid material such as still tower bottoms is opened for inspection, repair, etc., it of course remains full of air, plus possible moisture, when reassembled. This condition may prevent its taking suction when again started on its purpose. A method for withdrawing its air and starting it satisfactorily is shown by the drawing. The principle is simple. A small line is connected to the suction line or lines, one



for each cylinder in the pumps, and is run to a vacuum line, or to the suction line or duct to an induced draft or other blower or fan, or to any source of suction. This line is fitted with valves to cut off suction when not needed. This idea was applied to a pump drawing liquid bottoms from a vacuum tower, suction is obtained from the tower jet. *(Idea submitted by R. W. Baker, helper).*

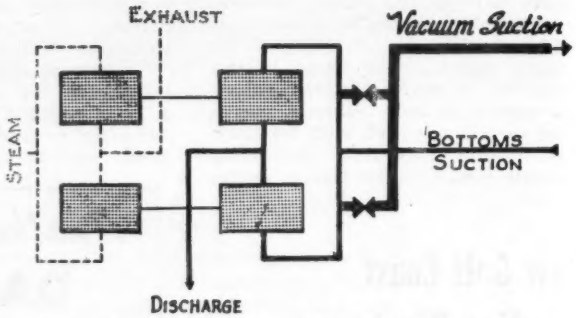
Tool for Removing Compressor Valves

THE tool shown in the drawing is designed to simplify the removal of the valves from the underside of the cylinders of Clark compressors. It consists of a heavy steel rod threaded internally to fit the threads on the operating bolt shown. This bolt is threaded for an inch or two at its upper end, a 1-in. section is left unthreaded as a stop, and the remainder of the rod which may be a foot long or more or less as is most convenient. A ½-in. rod is welded to the base end of the hollow body, and bent at right angles to form a crank for turning the tool body. In operating the tool the studs which hold the valve in place are removed and the tool is inserted in these studholes. The remainder of the studs are removed and the valve extracted by unscrewing the tool. The valve is replaced by screwing the tool up and replacing the studs. *(Idea submitted by W. E. Zawatsky, compressor maintenance department).*



Line for Adding Oil to Compressor Base

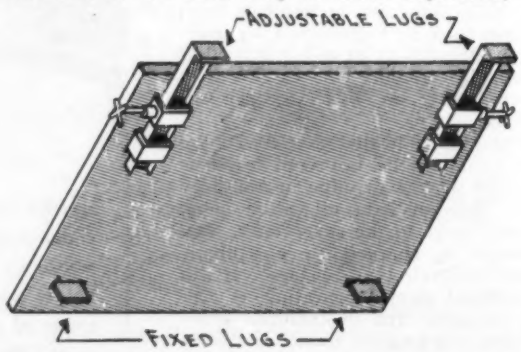
IN replenishing a compressor's oil supply in its lubricator from the sump in the compressor base, and allowing overflow from the lubricator back to this sump, it was found that the lubricator becomes fouled by the used oil. In a specific unit the lubricator was changed



so that only fresh oil was added directly to it. It was necessary to fill the base by hand which is a slow and often messy procedure. To solve the problem which caused a great deal of additional expense in servicing lubricators on a large number of compressors, the old line carrying oil direct to the compressor lubricator was disconnected beneath the old control valve and the part of the line to the lubricator eliminated. The small inlet line was extended direct to the opening in the base into which formerly the overflow from the lubricator was led, permitting flowing the fresh oil into the sump itself. The unattached segment of line to the lubricator may be removed or plugged by a small hand valve. *(Idea submitted by E. V. Caldwell, operator helper).*

Variable Ramp Bridges Boxcar-Dock Intervals

LOADING ramps with fixed intervals cause delay in setting rigidly into place. By making one pair of lugs fixed, and the opposite pair adjustable, the job of positioning the ramp becomes simple. Any number of ramps on one side or the other may be made adjustable, of



course. The adjustable lugs may be made of any convenient material of the required strength, such as flat bars bent at one end at right angles to make a short lug which turns vertically downward. Two steel slots through which the long leg of these lugs will slide are fastened to the under side of the ramp. Into one of these a set screw is fitted and tightens the lug in any adjusted position. *(Idea submitted by W. E. Dykes, boilermaker).*

These suggestions were submitted in the "Coin Your Ideas" program conducted by Humble Oil & Refining Co.

Engineering Fundamentals

No. 236

A FEATURE OF THE OIL AND GAS JOURNAL

Surveying: Tapes, Level Rods, Stadia Boards

STEEL tapes are generally manufactured in lengths of 50 or 100 ft. The 50-ft. tapes are usually bought with a reel. The 100-ft. lengths may be bought with or without a reel. Tapes without reels should be kept in the conventional circular form. This is done by "throwing" or "flipping" the tape. To throw a tape pick up one of its free ends between the thumb and index finger of the left hand with the free end of the tape pointing away from the body. Then reach back along the tape with the right hand, grasp the tape at the 5-ft. mark and move the hand forward placing the 5-ft. mark directly over the zero mark on the tape (do not turn the right hand over). Repeat this process, thus forming the tape into the shape of a figure eight. Wrap the whang at the ends of the tape snugly about the tape, then grasp the tape at the center of the figure eight, with the under strand in the left hand and the upper strand in the right hand. Keep the palms of both hands pointing toward the body. (Fig. 1). Separate the two hands as far apart as they will go in front of the body, then, still holding the tape tightly, roll the thumb of the right hand toward the body. This will cause the tape to "flip" and all that need be done is to move the knuckles of the two hands together. The tape will then be in the conventional circular form about 10 in. in diameter.

Fig. 1—"Throwing" a steel tape into circular form

Steel tapes break easily and hence must be guarded carefully. Most important of all, kinks and sharp bends in the tape must be avoided. Traffic may be allowed to pass over a steel tape provided it moves at a constant and moderate speed and the tape is kept flat on a plane roadway surface. The hazard increases tremendously on rough or graveled surfaces, and the tape should be withdrawn to allow the traffic to pass. The nominal length of the 100-ft. steel tape may be suitable for most work but for surveys requiring greater accuracy the more nearly exact length of the tape is needed. Tapes will be standardized by the Bureau of Standards, which furnishes this service for a nominal fee and also sends a certificate stating the length of the tape under specified conditions of support, temperature and pull. Typical markings on steel tapes are shown in Fig. 2.

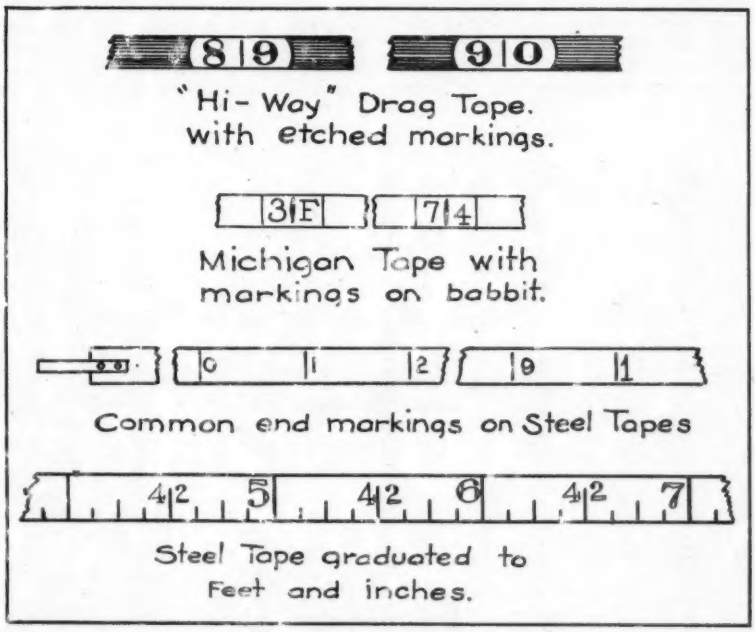


Fig. 2—Typical markings on steel tapes

Level Rods

Level rods can be obtained in two styles, known as (1) open-faced rods and (2) closed-faced rods (left view, Fig. 3), both of which can be read to 0.01 ft. without the aid of the target. Rods can be bought in two, three, or four sections (right view, Fig. 3) and they can be extended to an over-all length from 11 to 13 ft. The closed-faced rod is graduated directly to 0.01 ft. The open-faced rod is read to 0.01 ft. by making use of the fact that the tenths numbers are each 0.06 ft. high, placed symmetrically about the tenth mark. The foot markings are each 0.08 ft. high, also placed symmetrically. Since the open-faced rod has more white space on it, it will reflect more light and hence can be read more easily than the closed

Series prepared by Dr. E. A. Stephenson, head of petroleum engineering school, and Prof. D. Don Haines, department of civil engineering, University of Kansas

faced rod. This is especially true when the rod is used as a self-reading rod, i.e., when the rod is read by the instrument man.

An excellent modern type of rod is constructed so that a new metal face can be used to replace the worn face of an old rod, an improvement that extends the life of a rod tremendously.

At frequent intervals the over-all length of the rod should be tested. This is done best by extending the rod to its full length on a flat surface. Then the over-all length from the base of the rod to the 12 or 13-ft. mark is measured with a good steel tape. If the over-all length of the rod does not check, its length is corrected by removing and replacing the stop in its proper position. Such adjustments are occasionally necessary if the rod has had excessive wear or has been abused in the extended position.

Metallic Tape

The metallic tape is usually 50 ft. in length and is graduated to tenths and half-tenths. The tape is quite flexible since it is made of a waterproof fabric into which are woven small wires of bronze or brass to retard its stretching. The metallic tape comes in a small hand reel. It is used principally where a light flexible tape is needed and where small errors in lengths are not important. It is used chiefly in taking cross-sections for earthwork.

Stadia Boards

Stadia boards may be had in many different lengths and markings. Frequently they are hinged at the center so they can be carried more easily. The type of marking on the board depends primarily upon the individual who uses it. The two chief factors which influence this choice are (1) legibility at the customary distance at which the board will be read and (2) the accuracy required. A few typical stadia boards are shown in Fig. 4.

Frequent inspection, reasonable care, and occasional adjustment will pay good dividends in prolonging the useful life of surveying instruments and in increasing the speed and accuracy of field observations.

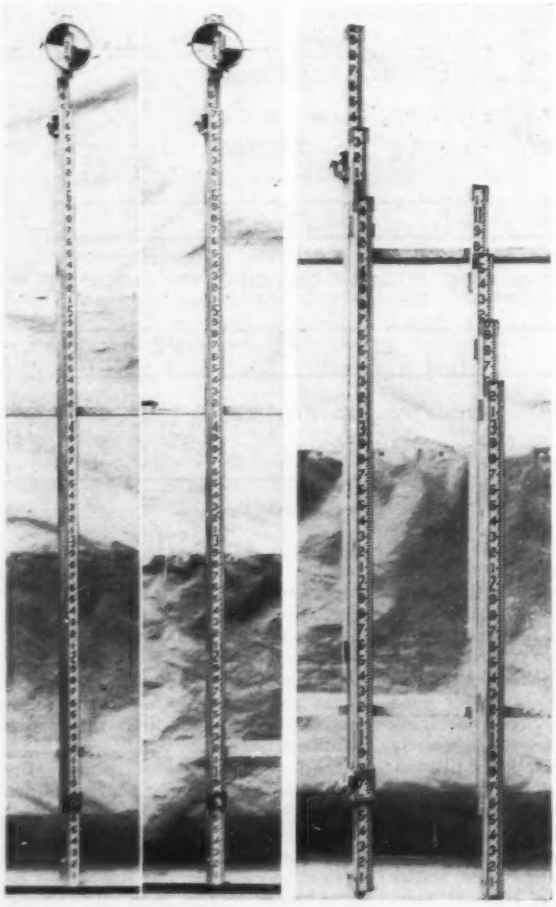


Fig. 3—(Left) Open-faced and closed-faced rods. (Right) Three and four-section rods

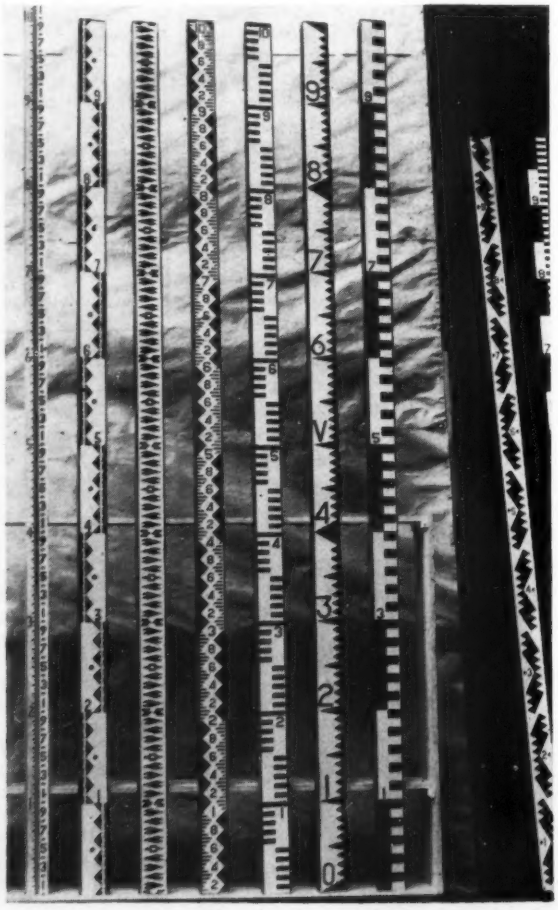


Fig. 4—Different kinds of stadia boards

The Refiner's Notebook

A WEEKLY FEATURE OF THE OIL AND GAS JOURNAL

Fouling Factors—Crude Oil And Water

THE fouling or dirtying of heat-transfer surface is the single most important consideration in obtaining commercial heat-transfer rates. The resistance caused by deposits of dirt are usually multiplied by 1,000 to obtain more readable numbers. These numbers (as shown in Figs. 1 and 2) are called fouling factors. Dirtying of both the inside and the outside surface may occur and hence two fouling factors are used in the transfer-rate formula:

$$H = \frac{1}{\frac{1}{h_i} + R_i + \frac{1}{h_o} + R_o}$$

in which:

- H = over-all transfer, B.t.u./°F. diff.-sq. ft.-hr.
- h_i = film-transfer rate inside tubes, same units
- h_o = film-transfer rate outside tubes, same units
- R_i = fouling inside tubes, fouling factor ÷ 1,000
- R_o = fouling outside tubes, fouling factor ÷ 1,000

Fouling factors for crude oil are shown in Fig. 1. The behavior of normal desalted crude oil is shown near the bottom, and the middle curve may also be used for wet crude oil below 200° F. More corrosion and wet crude oils require larger factors. Fig. 2 shows fouling factors for water. If a loose scale is formed (see boiler blowdown) velocity is effective in reducing the fouling factor but if a hard scale (see hard water) is produced velocity has little effect. Scaling tends to occur if the temperature in the water film exceeds 157° F. either by letting the outlet water get hot or by a very high temperature (400° F. and up) in the other fluid.

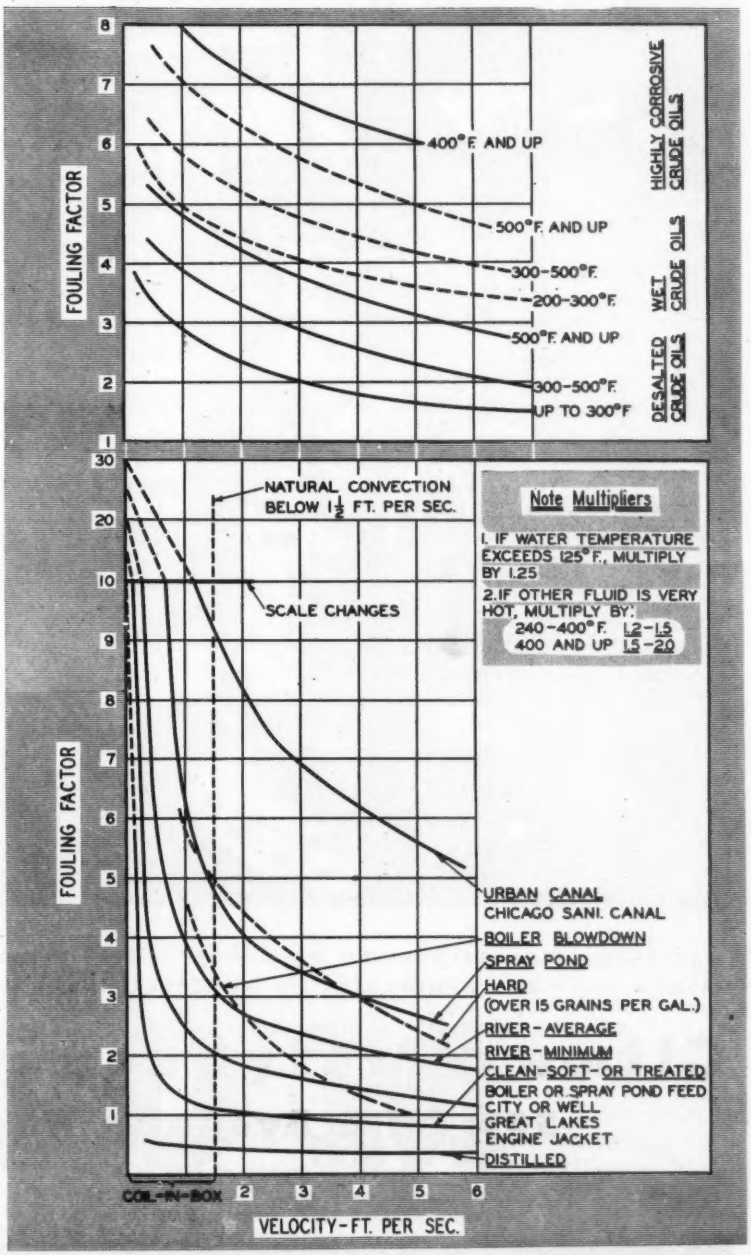


Fig. 1—(Top) Fouling factors for crude oils. Fig. 2—(Bottom) Fouling factors for water below 125° F. when other fluid is below 240° F. (See multipliers for other conditions)

No. 94 in a series by W. L. Nelson, professor of petroleum refinery engineering, University of Tulsa

MOLYBDIC OXIDE—BRIQUETTED OR CANNED • FERROMOLYBDENUM • "CALCIUM MOLYBDATE"
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MOLY

OIL AND GAS EQUIPMENT Digest

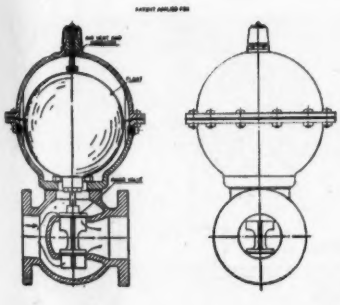
IT'S NEW CHECK IT

by Kenneth B. Barnes

(1) PORTABLE ALL-STEEL SPUDDER will drill top-to-bottom wells to 2,500 ft. and handle servicing work at much greater depths. Raised and lowered by built-in

power units, derrick can be erected in less than half hour. Handles up to 45,000 lb. static load, and with auxiliary leg, up to 75,000 lb. Available in skid-type base or pneumatic-tired semitrailer. Bull reel spools up to 4,620 ft. of ¾-in. line; sand reel spools 4,450 ft. of ½-in. *Bucyrus-Erie Co.*

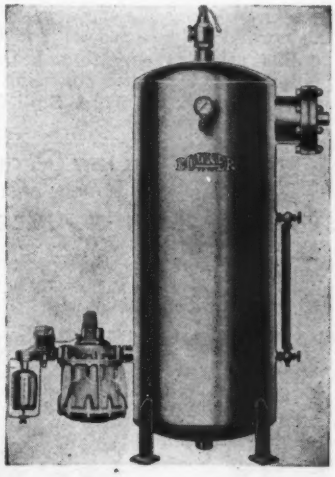
IT'S NEW CHECK IT



(2) AIR-LOK VALVE, designed for gathering lines connected to oil-field lease tanks. Automatically closes the line as soon as the withdrawal of liquid is completed and before any air or vapor is pumped into the system (in the past done with manually operated shutoff valves dependent upon the attention of a tank gager for proper manipulation). Pumping equipment not raced due to no-load condition. Possible to install a vacuum switch in the line near the pump to stop an electric or gasoline pumping engine soon after the valve closes. Other possible applications: draining condensate chambers, gas-liquid accumulating tanks, steam-condensate flash tanks. *Davis Regulator Co.*

IT'S NEW CHECK IT

(3) NEW GAS TRAP for efficient separation of gas from oil in individual well installations and as central units. The gas traps are also an important part of a new automatic well-check system which includes a proportional sampler and positive - displacement oil-well meter. The automatic well-check system fills a need of long standing in the field, furnishing permanent and accurate record of oil and water from each well. A float-controlled valve of new design—operating inside the gas trap—is used instead of a back-pressure regulator, oil valve, and float flange. There are no packing glands. As the liquid level rises, the float begins to close the gas outlet which causes pressure to build up inside the trap. When the pressure becomes sufficient to open a spring-loaded valve on the crude oil outlet, the fluid is forced out until the pressure is equalized. Use of the automatic, proportional sampler removes a predetermined quantity from every one-tenth barrel and deposits it in a glass container for periodic collection and analysis. The entire production of liquid enters the sampler. It operates only when the well is



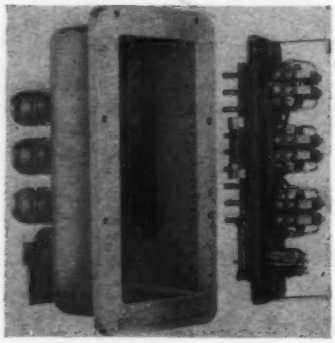
The Oil and Gas Equipment Digest presents a review of what is new in equipment and trade literature . . . makes it possible for readers to obtain full information on every subject by use of convenient "Check It—Mail It" service card. This periodic feature of The Oil and Gas Journal will include all that is new in equipment . . . at a time when new products are being introduced, and existing products improved.

Keep Informed. Save Time. Tear Out Card. Check It. Mail It.

producing fluid and the amount of the sample can be regulated. *Meter Sales Div., Bowser, Inc.*

IT'S NEW CHECK IT

(4) NEW UNIT ALARM SYSTEM supervises equipment and process operations. One compact enclosure, with all contact-making devices assembled on a plug-in panel. In operation, lights of different colors give continuous or flashing visible signals, and the alarm control causes a howler or gong to sound when conditions become abnormal. When conditions return to normal, the alarm light goes out, the normal light comes on, and the system is ready for another cycle of operation. Indicates departure from a predetermined normal condition of temperature, pressure, levels, etc. *Russell & Stoll Co., Inc.*



IT'S NEW CHECK IT

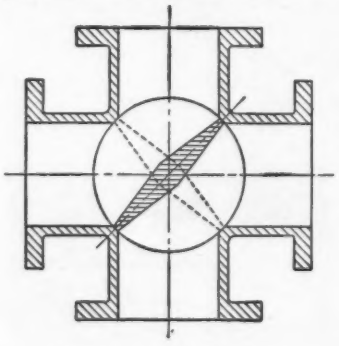
(5) TRIPLEX CEMENTING SHOE combines three distinct features: (1) Has all of the well-known features for guiding, floating, and cementing a string of casing; (2) the metal petal basket attached to triplex shoe forms a bridge, even in an irregularly shaped hole, to prevent the cement slurry from settling into permeable low-pressure zones below the shoe; (3) all slurry directed through side whirler ports and a reinforced resilient rubber sleeve-type back-pressure valve prevents a return flow; eliminates necessity of maintaining pressure on casing to prevent the cement from backing up the pipe. Secured to the lower end of the casing, the triplex shoe operates as a conventional float shoe during the running-in, washing, and hole-conditioning operations. All internal parts made of readily drillable materials. Over-all outside diameter is approximately ½ in. larger than the outside diameter of a standard casing coupling. *Baker Oil Tools, Inc.*

IT'S NEW CHECK IT

(6) STREAMLINE TRAVELING BLOCK AND HOOK for slim-hole rigs. Combined in one unit, it eliminates conventional bails and becket and results in a more compact assembly which requires less derrick space and handles much easier. Sheaves equipped with roller bearings. Sheave guards provide a smooth, streamlined appearance. Faster falling speed through the addition of cast-iron weight blocks. Full swiveling hook operates on ball thrust bearings and may be locked in position while tripping, and is provided with a positive safety latch. *Big Four Machine & Supply Co.*

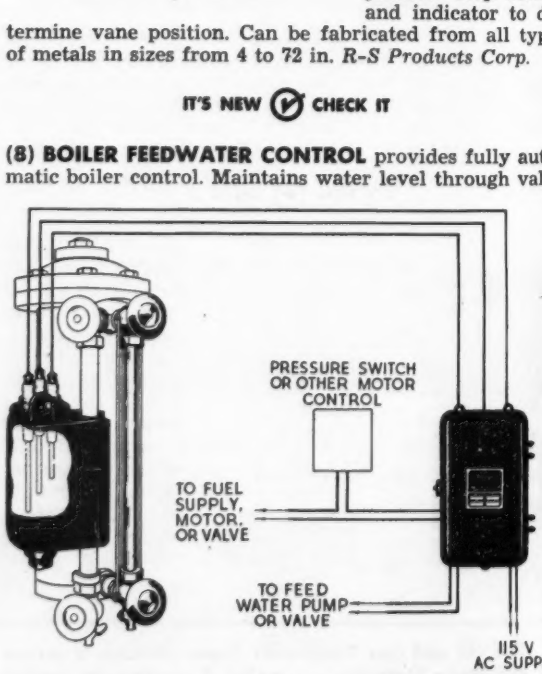
IT'S NEW CHECK IT

(7) FOUR-WAY TRANSFER VALVE. New 125-lb., single-vane, quick-operating control valve, used to transfer chemicals, oil, waste, water, and other materials from one line to another. Can be manually or automatically operated. Available for a wide range in pressure together with sub-zero and elevated temperatures. Equipped with adjustable stop screws and indicator to determine vane position. Can be fabricated from all types of metals in sizes from 4 to 72 in. *R-S Products Corp.*



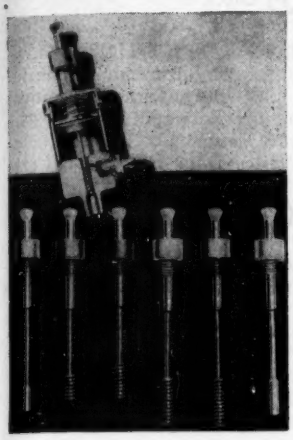
IT'S NEW CHECK IT

(8) BOILER FEEDWATER CONTROL provides fully automatic boiler control. Maintains water level through valve or pump control and cuts fuel supply and sounds an alarm at a predetermined dangerous low-water level. Operates without any moving mechanical elements; only contact with boiler through an auxiliary fitting containing metal probe rods which determine the control



levels. Should water drop below lowest safety probe, control immediately shuts off fuel supply and sounds an alarm. *Combustion Control Corp.*

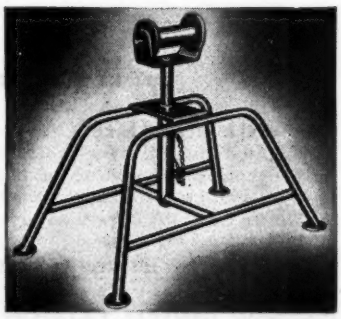
IT'S NEW CHECK IT



(9) LUBRICATORS for industrial bearings, designed with lubricant capacities from ½ oz. to 8 oz., automatically dispense oil or grease in a measured, uniform flow to a moving bearing, and stop feeding lubricant when a bearing becomes motionless. Assure controlled lubrication over a long period of time. Six interchangeable valves are available with distinctive caps for identification. The valves with colored caps exert varying degrees of control of feed on greases of different densities. *Gray Co., Inc.*

IT'S NEW CHECK IT

(10) MATERIALS HANDLING EQUIPMENT for conveying pipe, tubes, rods and bars. Can be used as a single unit or in line, tandem fashion, for transferring materials from box cars to warehouse, from bins to threading machines, trucks, etc. Has an adjustable swivel center post which raises the roller to a height over all of 51 in. Minimum height is 38½ in. Handles up to 12-in. pipe. *John Moore Specialty Co.*



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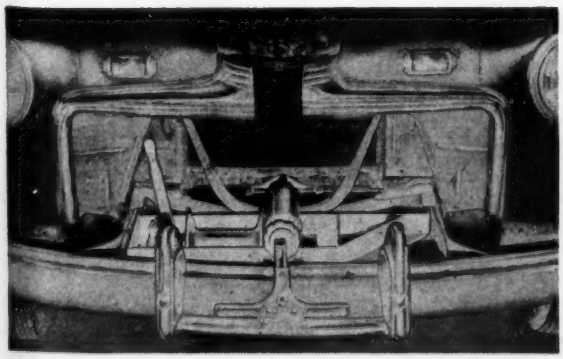


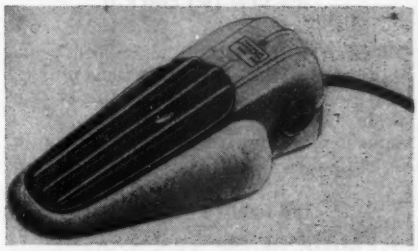
(11) NEW LIGHTWEIGHT WINCH has capacity of 150 ft. ¼-in. cable. Bronze worm gears. Worms working at 60 to 1 ratio provides a line pull of 9,000 lb. Designed for mounting on passenger cars. No power takeoff required. Completely enclosed inside radiator grill. Weighs but 28 lb. *Ramsey Brothers Manufacturing Co.*

IT'S NEW CHECK IT

OIL AND GAS EQUIPMENT Digest

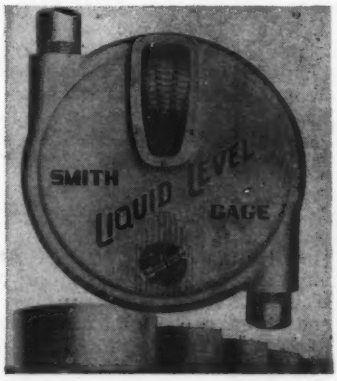
IT'S NEW CHECK IT

(12) NEW FOOT SWITCH for controlling motor-driven equipment up to 1 hp. and for photo enlargers and printers. Has pilot light to show location in dark. Operates on any a.c. circuit. Uses snap-action, single-pole, double-throw switch, silver contacts. *Industrial Timer Corp.*



IT'S NEW CHECK IT

(13) NEW TANK GAGE can be installed on a tank that is full of liquid without taking the tank out of service, as no interior guide wires are required. The float is suspended on a stainless-steel wire which hangs perpendicular in spite of currents. Reading the gage face is simple: feet of depth on the face of the dial; inches and fractions on a micro scale on the outer periphery. Additional equipment will permit transmission of reading to a remote point. *Smith Meter Co.*



IT'S NEW CHECK IT

(14) HEAVY-DUTY OILBATH SWIVEL rated at 250 tons static load and drilling depth of 10,000 ft. All bearings and moving parts submerged in 18-gal. oil bath. Fluid passage is 3 in. Wash pipe specially hardened and ground to give a smooth, long-wearing surface. Heavy duty oil seals are used throughout to keep the oil in and foreign matter out. Three antifriction bearings are used, two straight roller and one tapered roller, to handle all loads with minimum friction loss. *The Brewster Co., Inc.*

IT'S NEW CHECK IT

TRADE LITERATURE

(15) STAINLESS STEEL VALVES. Two new bulletins describe manufacturer's models and uses of these corrosion-resistant valves. Bulletin No. 2 covers technical information on development, resistance, etc., of the alloy. Cutaway drawings show structural features and chart shows corrosion resistance as established by laboratory tests. *Alloy Steel Products Co., Inc.*

IT'S NEW ✓ CHECK IT

(16) "POWER AND LIGHT" is a new four-page bulletin describing power and floodlight sets plus a long list of their uses and advantages. Illustrations of power range models, their specifications and ratings, are given, as well as pictures of actual installations and units. *Consolidated Diesel Electric Corp.*

IT'S NEW ✓ CHECK IT

(17) SLUSH-PUMP LINERS AND RODS. New catalog lists hardened and ground slush pump liners in all sizes for all standard pumps. Illustrated with pictures of manufacturing processes. Gives types, weights and all necessary information on liners, rods, and wash pipes. *J. P. Machine & Tool Co.*

IT'S NEW ✓ CHECK IT

(18) CORROSION CONTROL. Recently issued 12-page bulletin offers tested solutions for corrosion problems in the petroleum industry. Consists of factual reports on uses and tests of this manufacturer's plastic coatings. Summarizes typical applications, such as treating of acid sludge tanks, rundown tanks, sour crude and other storage tanks, tank cars, etc. *Amercoat Div., American Pipe & Construction Co.*

IT'S NEW ✓ CHECK IT

(19) HEAVY PLATE WORK AND FABRICATION. An impressive 32-page brochure outlining facilities and services for heavy refining plate work, bubble decks and towers, refining furnace structures, and general steel fabrication available to the oil industry. Extensively illustrated. *Watkins, Inc.*

IT'S NEW ✓ CHECK IT

(20) "THE ZINC INDUSTRY," a mine-to-market outline, covers this interesting material in its historical and economic aspects. The history of zinc in the United States, its use and various alloys, and methods of producing and marketing are covered in a well-written and illustrated booklet published in the interest of all users of zinc or alloy. *The American Zinc Institute, Inc.*

IT'S NEW ✓ CHECK IT

(21) SELF-LOADING FLOATS. Six-page broadside, ring punched for handy filing, illustrates and gives specifications for this manufacturer's line of self-loading floats. All models and sizes are included and specifications of each are shown. *Hobbs Manufacturing Co.*

IT'S NEW ✓ CHECK IT

(22) SPOT RECONDITIONING OF PIPE LINE. Manufacturer's bulletin describes use of bituminous material for spot reconditioning of pipe lines without removal from the ditch. Applied by hand where spot is not reachable with a brush. Technically described. Has been successful in stopping leaks. *Wailes Dove-Hermiston Corp.*

IT'S NEW ✓ CHECK IT

(23) REFRACTORY SPECIALTIES. New 35-page catalog, divided into five parts, contains product description and instructions for use, foundry applications, boiler-furnace application and construction, industrial-furnace application, and an appendix which contains definitions of terms, temperature conversion tables, properties of gases, and other extremely useful tables. Well illustrated and all products are extremely well described. *The Ramtite Co.*

IT'S NEW ✓ CHECK IT

(24) PHOTOELECTRIC AND ELECTRONIC CONTROLS, loose-leaf catalog, covers photoelectric and electronic controls, giving complete specifications, applications, and operating data, as well as accessories, liquid level controls, probe fittings, etc. Loose leaf for easy maintenance. *Photoswitch, Inc.*

IT'S NEW ✓ CHECK IT

(25) WELL STABILIZER. New pamphlet illustrates use of patented stabilizer for control of salt water. Cutaway drawings show location of the apparatus in the well and its function in stabilizing bottom-hole conditions. *The Stabilizer Co.*

IT'S NEW ✓ CHECK IT

(26) NEW GENERAL CATALOG by petroleum equipment manufacturer, now available, features Unibolt welding neck coupling, adjustable wing valve, and "X" type flow bean, as well as other products. Available also is pamphlet reporting testing of a welding neck coupling for sealing hydrogen gas. *Thornhill-Craver Co.*

IT'S NEW ✓ CHECK IT

(27) EVAPORATORS. New bulletin covering evaporators for boiler feed make-up, describes different types for various capacities and pressures, and includes explanations of the functions of evaporators, types of evaporator systems, and their function in plant conditioning. Profusely illustrated with photographs and diagrams. *The Griscom-Russell Co.*

IT'S NEW ✓ CHECK IT

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REFINING

Lion Takes Possession Of U. S. Ordnance Plant

EL DORADO, Ark.—Lion Oil Co. last week took possession of the Ozark Ordnance Works which it has leased from the Government for the production of ammonia, nitrogen fertilizers, and other chemical synthetics.

Lion is to construct a new $1,000,000 unit at the plant near here for the production of finished ammonium nitrate fertilizers. Pending its completion, the company also has leased for temporary use ammonium nitrate graining facilities at Minden, La., and at Texarkana, Tex. The facilities leased by Lion, with an option to buy later, use natural gas, air, and water with a production capacity of 165,000 tons of ammonium nitrate and 90,000 tons of anhydrous ammonia annually.

Crude Runs Increase in Gulf Coast Refineries

HOUSTON.—Refiners in the Gulf Coast Refiners Association stepped up crude runs to stills during the last half of April from 58.5 per cent to 63.3 per cent of rated operating capacity, while stocks of all grades of gasoline and naphthas held in the plants rose 33,547 bbl.

The association's semimonthly report said three refineries in the group reporting were not operating during the period. Crude runs to stills averaged 99,970 bbl. daily of the rated 158,000 bbl. capacity.

At the end of April, stocks of all grades of gasoline and naphthas stood at 1,986,030 bbl. Automotive gasoline stocks considered alone were 1,283,725 bbl. May 1, showing an increase of 226,772 bbl.

Kerosene stocks at 181,068 bbl. May 1 indicate a decrease of 34,097 bbl. during the period. Diesel gas-oil stocks May 1 were 69,213 bbl. reflecting a decrease of 90,670 bbl. Stocks of No. 5 fuel oil increased 49,965 bbl. to 53,091 bbl., and Bunker C fuel oil increased 158,256 bbl. to 431,469 bbl. on May 1, 1946.

Indiana Standard to Close Greybull, Neodesha Plants

CHICAGO.—Wartime technological developments in petroleum refining have forced the Standard Oil Co. (Indiana) to a decision to close its refineries at Neodesha, Kans., and Greybull, Wyo., and consolidate with those of other Standard refineries.

The decision is effective about 2½ years hence at Neodesha and about 2 years hence at Greybull. The installation of catalytic cracking equipment during the war, the company explained, has developed a competitive situation that would require such equipment to be installed at these two refineries as well as at other Standard refineries not far from each of the two. Engineering studies showed, however, that this duplication would be uneconomic.

Construction of catalytic crackers and related equipment has been decided upon for the Sugar Creek, Mo., refinery and the Casper, Wyo., refinery. Negotiations will soon be opened with the unions at those plants to work out a basis for the transfer of Neodesha employes to such jobs as will be available at Sugar Creek and similarly for the transfer of Greybull employes to Casper.

The Greybull refinery has a crude capacity of 5,500 bbl. daily; the Neodesha plant, 7,700 bbl. daily. Indiana Standard's Sugar Creek refinery has a crude capacity of 26,500 bbl. daily, while the capacity of the Casper plant is 13,000 bbl. daily.

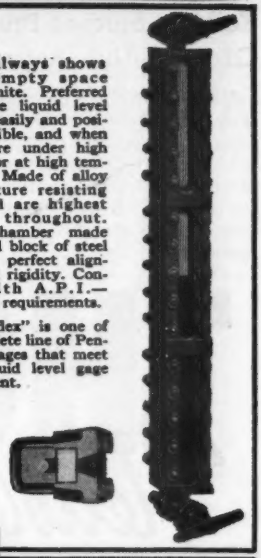
Electric Desalter Unit Placed in Operation

LOUISVILLE, Ky.—Aetna Oil Co.'s new $40,000 four-unit electric desalter was placed in operation recently at its 4,500-bbl. refinery here.

Increased salt content of the crude

OIL and GAS
BURNING EQUIPMENT
NATIONAL
AIROIL
BURNERS
1236 E. Sedgley Ave.
PHILADELPHIA 34, PENNA.

PENBERTHY
"REFLEX"
DROP FORGED STEEL
LIQUID LEVEL GAGES



Liquid always shows black—empty space shows white. Preferred where the liquid level must be easily and positively visible, and when liquids are under high pressure or at high temperature. Made of alloy temperature resisting steel and are highest quality throughout. Liquid chamber made from solid block of steel to assure perfect alignment and rigidity. Conform with A.P.I.—A.S.M.E. requirements.

The "Reflex" is one of the complete line of Penberthy Gages that meet every liquid level gage requirement.

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DETROIT, MICH. Canadian Plant WINDSOR, ONTARIO

McCORD
TYPE "C"
CHEMICAL MEASURING
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Extremely Accurate
DEPENDABLE
Accuracy of delivery in McCord chemical pumps is the result of a finely engineered design with a minimum number of parts. Dependability is insured because working parts are fully enclosed, protected from dirt and the elements. Specify McCord. For sale by National Supply Co.
Standard of the Oil Fields
McCORD
CORPORATION, DETROIT 11, MICH.

oil made the installation necessary to speed up throughput time and to decrease maintenace costs, company officials said. The equipment was installed by Aetna and is operated under license from Petroleum Rectifying Co.

Kellogg Studies Problem Of Small-Unit Refiner

NEW YORK.—The much-discussed question of "what's to become of the small-capacity refinery" in the new era of competitive marketing may be answered in the application of the fluid catalytic - cracking process to small units, according to an announcement by The M. W. Kellogg Co. in its publication, Kelloggram.

A study of the small unit's problems has indicated that in most cases the small refinery can incorporate fluid catalytic - cracking methods to meet the quality standards of its competition, and still enjoy profitable over-all operation, the publication said.

Assuming as now indicated that the new automobile engine will need gasoline of 80 to 85 octane rating, small refiners will face competition that cannot be met profitably with their present equipment, it continued. Reassuring to these operators is the fact that marked progress has been made in the application of the fluid principle to small - capacity plants, Kelloggram said. The Kellogg company's studies of two small refineries, as presented in the Kelloggram, show that gasoline costing 5.3 cents to produce is possible from a refinery processing only 4,500 bbl. of crude per day and that this plant can show a net operating credit of $700,000 per year before depreciation and taxes. Analysis of a second refinery, 9,500-bbl. capacity, shows a similar annual credit of $1,200,000.

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Process Recovers Wax From Tank Settlings

WASHINGTON.—A new Bureau of Mines release deals with the recovery of high melting-point paraffin wax from tank bottom settlings under a process developed in their laboratories and used successfully in a field pilot plant near El Dorado, Kans.

The bureau process is said to be relatively simple and recovers as much as 90 per cent of the wax in the oil. This oil, it is pointed out, contains as high as 17 per cent microcrystalline wax of a high melting point which is otherwise waste material. Demand for this wax has been climbing steadily due to expanded commercial uses.

The Mid-Continent area is expected to provide an untapped source from the large quantity of oil field emulsion which does not respond to conventional demulsifying treatment.

Asphalt Production Shows Marked Gain in February

WASHINGTON. — Production and domestic demand for asphalt showed a substantial increase in February, according to the monthly report of the Bureau of Mines.

Production gained from a daily average of 14,822 tons in January to 17,118 tons in February. Domestic demand in February was 12,104 tons daily, against 8,967 tons daily in January. Stocks during the month rose from 786,500 tons to 889,600 tons at the end of February.

Production of road oil, which has been in short supply due to the heavy demand for residual and allied products, rose from 38,000 bbl. in January to 160,000 bbl. in February, the bureau reported. Stocks gained from 304,000 to 405,000 bbl. during the month.

Penn Crude Runs Down

WASHINGTON.—Runs to stills of Pennsylvania crude oil during the week ended May 4 totaled 410,471 bbl., or a daily average of 58,639 bbl. This represented a decline of 2.2 per cent from the daily average of 59,960 bbl. in the week ended April 27, according to data in statistical bulletins of the National Petroleum Association.

PIPE LINES

Fuel Entering Pipe Lines Shows Gain in February

WASHINGTON.—Amount of motor fuel turned into pipe lines gained from a daily average 461,838 bbl. in January to 494,000 bbl. in February.

Bureau of Mines figures showed the total turned into lines in January as 14,317,000 bbl. against 13,832,000 bbl. in February. In February 1945, with heavy war movement of fuels, the total was 24,075,000 bbl.

Stocks in lines and working tanks at the end of February were 10,038,000 bbl.—an increase of about 8 per cent over the total of 9,290,000 bbl. at the end of January. Motor fuel delivered from the lines in February totaled 13,066,000 bbl. against 15,593,000 bbl. in January.

Sun Completes 8 and 10-In. Line in Southwest Texas

CORPUS CHRISTI, Tex.—Sun Pipe Line Co. recently completed an all-welded 8 and 10-in. main pipe line to serve producing fields extending from the Mexican border to Corpus Christi.

Totaling 130 miles in length together with sections previously in operation, the line originates in fields in Starr County and terminates at Humble Pipe Line Co.'s Ingleside tank farm.

Here oil is pumped to Harbor Island and loaded aboard tankers for delivery to the Marcus Hook, Pa., refinery of Sun Oil Co. The 37-mile, 8-in. part of the line extends from Kelsey Bass field, Brooks County, to Seeligson field, Jim Wells-Kleberg counties. Seventy-seven miles of 10-in. line runs from Seeligson field to the Ingleside tank farm.

A 55,000-bbl. tank was erected at Seeligson pump station and two electric pumping stations were installed, one at Seeligson and one at Banquette. With the temporary pumping equipment now in operation, it is possible to attain a pumping rate of 40,000 bbl. daily from Seeligson to Ingleside. With permanent equipment, the capacity is expected to be raised to 48,000 bbl. daily. A 130-mile telephone line is being constructed to link all fields and terminals. Work on laying and coating of the line was done under contract by J. R. Horrigan Co., Houston, who used two crews, one for each size line.

Atlantic to Lay Crude Line in West Texas

MIDLAND, Tex.—An 8-in. line extending 46 miles from the Block 31 pool in eastern Crane County to Midland will be built by Atlantic Pipe Line Co. which also is acquiring the gathering system of Texas-New Mexico Pipe Line Co. in the pool.

The line will terminate near here at Atlantic's tank farm and pipe line terminal. The company is erecting two 80,000-bbl. storage tanks in the Block 31 pool to separate Devonian and Ellenburger crude.

Construction Begun On New Great Lakes Lines

KANSAS CITY.—Great Lakes Pipe Line Co. has begun construction on its recently announced extension program. Additional details released on the 200 miles of 8-in. and 300 miles of 6-in. lines include distribution terminals to be built at Watertown, S. D.; Marshall, Wilmar, Alexandria and Mankato, Minn.; Fargo and Grand Forks, N. D. At each terminal, 320,000 bbl. of steel storage will be erected, together with service buildings, motor transport, and railroad loading racks.

Pump stations at El Dorado and Atchison, Kans.; Falls City, Decatur, Nebraska City and Irvington, Neb.; Sioux City and Hawarden, Iowa; Sioux Falls, S. D.; Marshall, Willmar, Alexandria, and Fergus Falls, Minn., and Fargo, N. D., will comprise a diesel engine, centrifugal pump, and auxiliary equipment. These stations, spaced approximately 45 miles apart,

UP-TO-DATE PIPELINE MAPS

JACOBSON'S MAP SHOWING CRUDE OIL AND GASOLINE PIPELINES OF THE UNITED STATES
SIZE 48"x75" SCALE-1"=40 MILES

JACOBSON'S MAP SHOWING NATURAL GAS PIPELINES OF THE UNITED STATES
SIZE 48"x75" SCALE-1"=40 MILES

POSTCARDS GIVING COMPLETE DESCRIPTION AND PRICES SENT ON REQUEST

E.C. JACOBSON, MAPS
516 MAYO BLDG.
TULSA 3, OKLAHOMA

WHEN YOU WANT The Best IN PIPELINE CONSTRUCTION

OKLAHOMA CONTRACTING COMPANY

DALLAS TEXAS

SOUTH AMERICA
APARTADO 1085
CARACAS, VENEZUELA

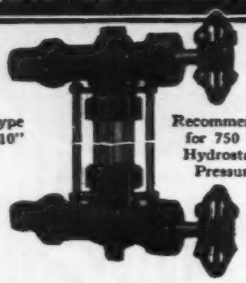
"CLEVELANDS"....

GEARED TO THE JOBS

. . . will deliver maximum ditching performance day in and day out, whether it's Long Main Lines, Gathering Lines, Reconditioning, Stripping Pipe or ordinary Maintenance.

THE CLEVELAND TRENCHER CO.
"Pioneer of the Small Trencher"
20100 ST. CLAIR AVE. · CLEVELAND, OHIO

PENBERTHY
DROP FORGED STEEL
LIQUID LEVEL GAGES



Type "10"

Recommended for 750 lb. Hydrostatic Pressure

Steel construction throughout with stainless steel interior trim. Automatic shut-off is positive and instantaneous; stainless steel balls shut off the flow of liquid when glass breaks. Heavy duty stuffing boxes, union connections, offset construction facilitate cleaning and simplify glass replacement. Conform with A.P.I.—A.S.M.E. requirements.

This is one of the complete line of Penberthy gages that meet every liquid level gage requirement.

PENBERTHY INJECTOR CO.
DETROIT, MICH. Canadian Plant WINDSOR, ONTARIO

McVEAN & ROBERTS
M&R
PIPE LINE
CONSTRUCTION

The Sign of Reliability

ODESSA, TEXAS

GENERAL
PIPE LINE
CONSTRUCTION

Odessa, Tex. P. O. Box 2607

Ft. Worth Tel. H 3-4100

will have a pumping capacity of 30,000 bbl. a day.

Pipe lines now under construction and expected to be placed in operation in August 1946, are 275 miles of 8-in. between Kansas City, Kans., and Omaha, Neb.; El Dorado and Humboldt, Kans. When these facilities are placed in operation, the system of the company will comprise a total of 3,432 miles of pipe lines.

Sinclair Planning Further Pipe Line Extensions

NEW YORK.—Sinclair Refining Co., already under way on an expansion program of its products pipe lines from Toledo to Columbus, Ohio, and Toledo to Detroit, is planning other extensions in that area.

The present line from Chicago to Toledo is to be expanded northward to Detroit, consisting of 56 miles of 6-in. line, one pump station, communication system, and a Detroit terminal storage of about 120,000-bbl. capacity. From Toledo through Marion, Ohio to Columbus, the company will build 118 miles of 6-in. line, with two intermediate pump stations and 100,000 bbl. of storage at Columbus. Further expansion of this latter system will extend from Marion to Cleveland, Akron, and Youngstown, joining the present Marcus Hook-Steubenville, Pa., line at Steubenville. Construction of this line will involve 225 miles of 6-in. pipe.

A considerable portion of the expansion program is scheduled for completion this year, Sinclair officials said.

FPC Approves Program of Natural Gas Pipe Line

WASHINGTON.—The Federal Power Commission last week gave its approval to a $20,000,000 program of Natural Gas Pipe Line Co. of America for expansion of its gas service in the Midwest.

The program calls for pipe line construction and improvement from Texas gas fields to the north central section. Natural Gas Pipe Line was authorized to supply fuel to North Shore Gas Co. for distribution in a number of communities in Illinois and Iowa.

Gulf to Construct Line

JACKSON, Miss.—Gulf Refining Co. has announced plans to lay a 14-in. gathering system line to the Baxterville field of Lamar and Marion counties, Mississippi. In addition to Gulf, operating companies in the field include Sun Oil Co., Superior Oil Co. of California, The Texas Co., and Humble Oil & Refining Co. Gulf Refining Co. also is planning a loading rack at Lumberton, Miss., capable of handling 40 cars daily, and two 55,000-bbl. storage tanks.

Line Planned in Mississippi

JACKSON, Miss.—Southern Natural Gas Co. is planning to build a pipe line from Gwinville field, Jefferson Davis County, Mississippi, to connect with its present line near here. The new line will tap production of Superior Oil Co. of California properties in Gwinville field.

Corrosion to Be Studied

MIDLAND, Mich.—A new laboratory, which will study industrial corrosion problems including use of magnesium as an expendable galvanic anode for preventing pipe-line corrosion, has been set up by Dow Chemical Co. The laboratory will be under the supervision of Harold A. Robinson, who for the past 15 years has been conducting research on electromotive and corrosion problems in Dow's physical research laboratory. H. A. Humble, formerly associated with the Ethyl-Dow plant in Wilmington, N. C., will be in charge of laboratory research.

PIPE LINE SUPPLIES
AND EQUIPMENT

GORMAN-RUPP PUMPS

There's a model for every pumping requirement . . . for pumping from 5 to 2100 gallons per minute. The most dependable pump for the least money.

The Clarence L. Boyd Co., Inc.
Phone 8191 LD 745
Tulsa, Oklahoma

Natural Gas

Coal Strike Reflects Gas Need, Poe Says

HOT SPRINGS, Ark.—E. Holley Poe, natural gas consultant, speaking before the Arkansas Utilities Association here, appealed to the country's law-makers for relief from the coal industry's program of intervention in the expansion of natural gas service.

"The coal industry is virtually able to cripple other dependent industries during strike periods," he said. "Strikes in the bituminous and anthracite coal industries over the past 20 years have accounted for 99,000,000 idle man-days, according to the records of the Bureau of Labor Statistics.

"The extent to which any public-service industry can be depended upon to meet its responsibilities is largely determined by its labor relations. Labor relations of the natural gas production industry have been so nearly in balance for 20 years that operations have not been interrupted by that factor."

Added to a history of relatively stable labor relations, expansion of natural gas service during recent years has been based on high combustion efficiencies and economies.

State and municipal officials, industrial and labor representatives, as well as natural gas experts have testified at FPC hearings, recording their approval of natural gas for new areas, Poe said. The coal industry, aided by railroad interests, was also represented at the hearings as a part of their program to retard the expansion of gas service.

Poe called attention to a recent application to the Federal Power Commission for approval to sell natural gas for steam generation in an electric plant. At the initial hearing it was disapproved by FPC because "the use of gas would displace approximately 30,000 tons of coal annually." Opposition by the coal industry is not new in character, he declared. Industrial history reveals that most technological developments have been met with efforts by opposing groups to apply restrictions and usually in terms of "maintaining the widest public or social benefits."

Low Gas Price Deplored At Meeting of Producers

AMARILLO, Tex.—Natural gas produced in Texas and supplied to less favored communities in other states is the most convenient and satisfactory fuel in the world and should command prices commensurate with other fuels, Fred Shield, president of the Texas Mid-Continent Oil and Gas Association, told the annual meeting of the Panhandle Producers and Royalty Owners Association here last week.

Shield deplored the low prices received for natural gas by Texas producers and cited the fact that Texas gas sells for less than 3 cents per 1,000 cu. ft. at the well, while gas produced in Ohio sells for 16.4 cents; Pennsylvania 22.3 cents; New York 24.5 cents. He said Texas gas producers and carbon black manufacturers should sell their products on the basis of quality instead of cheapness.

"We hear talk from the tax eaters that natural gas taxes should be increased," said Shield, "but, any tax placed on gas today with its present low price becomes confiscatory. Adequate prices will bring increased taxes automatically, since the tax is based on price received at the well."

Brooklyn Union Gas Plans Propane-Air Facilities

NEW YORK.—Brooklyn Union Gas Co. will increase its gas production capacity by 12,000,000 cu. ft. daily with the installation of propane facilities expected to be in operation by early December.

Cost of installation of the facilities is estimated at about $500,000. Brooklyn Union Gas will mix the propane with air to reduce its heat content to 550 B.t.u., the amount in manufactured gas now supplied by the company. The facilities provide capacity to meet the increasing demand for gas in home heating.

FPC Orders Gas Companies To File Monthly Report

WASHINGTON.—A monthly statement of operating revenues and income will be required of Class A and B natural gas companies (those with annual gas operating revenues of more than $250,000), the Federal Power Commission has ordered.

The statement on Form No. 11 must be filed with FPC before the last day of each month. First of the forms must be filed before the last day of May to show the required information by months for the first four months of 1946.

Rehearing Granted in Ford Motor Co. Case

WASHINGTON.—A rehearing of Panhandle Eastern Pipe Line Co.'s petition to furnish natural gas to Ford Motor Co., dismissed 2 months ago by the Federal Power Commission, has been set for rehearing on August 26.

FPC refused to approve the request on grounds it would impair service to Panhandle's present customers and was against public interest. The ruling attracted considerable attention in the natural gas industry, although FPC disclaimed it was regulating "end use."

Boiler Fuel Use Authorized

WASHINGTON.—Northern Natural Gas Co. has been authorized by the Federal Power Commission to deliver gas during the coal emergency for use as boiler fuel in Iowa Electric Light & Power Co.'s Boone, Iowa, electric generating plant.

FPC Shortens Procedure

WASHINGTON.—An abridged procedure under which applicants need not appear at hearings in unprotested applications has been placed in effect by the Federal Power Commission. The commission said the shortened procedure will be used in cases where it appears an application and accompanying evidence constitutes sufficient information for approval.

Natural Gasoline

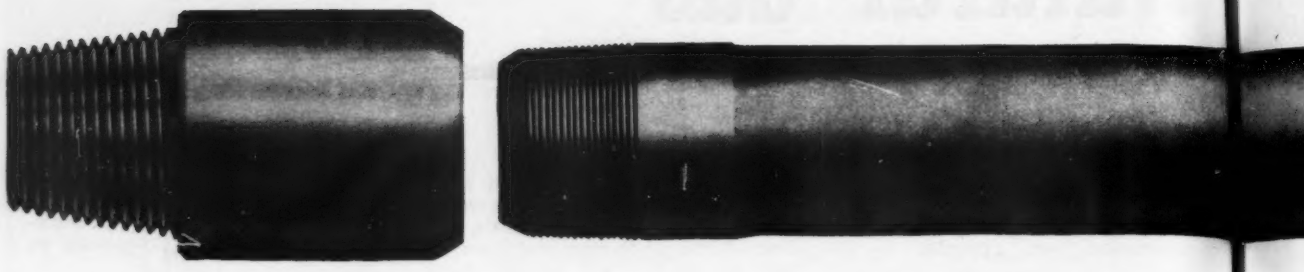
Four Companies Agree on Slaughter Field Plant

MIDLAND, Tex.—Four major companies have agreed on the construction of a natural gasoline plant which will have a capacity of 100,000,000 cu. ft. of natural gas daily from Slaughter field of North Permian Basin.

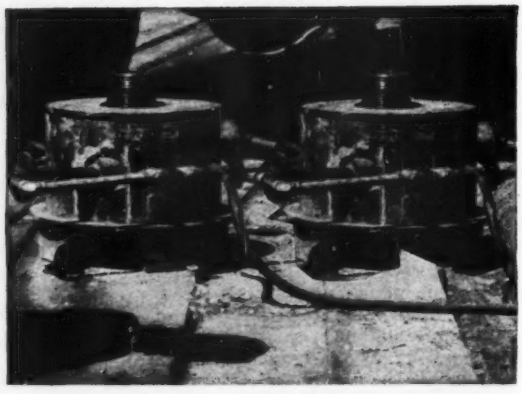
Stanolind Oil & Gas Co. will construct and operate the plant. Other participating companies are The Texas Co., Magnolia Petroleum Co., and Honolulu Corp. Some of the residue gas will be used for field repressuring if feasible.

In Washington, the Bureau of Mines said the use of helium as a tracer gas is being tested in the Slaughter field prior to construction of the $15,000,000 gasoline plant.

SIMPLICITY



HEAT THE TOOL JOINT



...and your drill stem

THE END OF THE PIPE IS "SHRUNK-ON" TIGHT AGAINST THE SHOULDER STOP IN THE TOOL JOINT

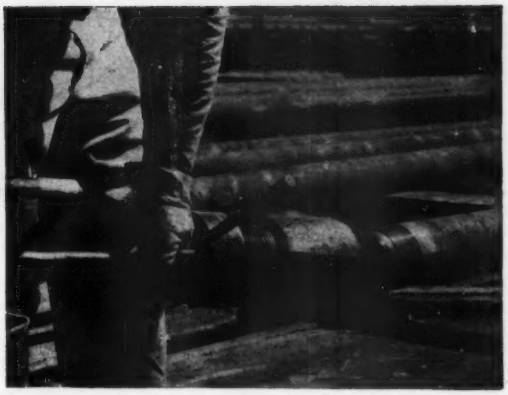
THE SHRINK-GRIP *"SAFETY AREA"* SEALS AGAINST LEAKAGE AND SUPPORTS THE DRILL PIPE AGAINST BREAKAGE AT THE LAST ENGAGED THREAD.

REED

HAND APPLIED . . .

PERSONIFIED

SCREW THE TOOL JOINT ON ... BY HAND



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Super Shrink-Grip TOOL JOINTS

... AND NO GAUGING OR SELECTIVE FITTING REQUIRED

Reed ROLLER BIT COMPANY

HOUSTON 1, TEXAS

STATISTICS and

WEEKLY WELL COMPLETIONS . . . WEEK ENDED MAY 18, 1946

	Total of all wells					Cum. to date		Wildcat completions and discoveries					Cumulative total, 1946				
	Comp.	Oil	Gas	Dry	Footage	1946	1945	Oil	Dist.	Gas	Dry	Total	Oil	Dist.	Gas	Dry	Total
New York	27	14	0	*13	37,412	589	475	0	0	0	0	0	0	0	0	0	0
Pennsylvania	78	42	2	†34	115,251	1,511	1,395	0	0	0	0	0	0	0	0	0	0
West Virginia	11	0	9	2	30,173	261	295	0	0	0	0	0	0	0	0	0	0
Ohio	28	10	9	9	67,546	428	297	0	0	0	1	1	2	0	9	16	27
Indiana	13	9	0	4	23,835	121	59	0	0	0	0	0	1	0	0	8	9
Kentucky	10	5	3	2	23,366	165	137	0	0	0	0	0	2	0	0	15	17
Illinois	41	23	0	18	109,053	790	598	1	0	0	9	10	17	0	0	140	157
Michigan	17	4	3	10	49,471	268	286	0	0	0	6	6	8	0	1	86	95
Kansas	32	21	2	9	105,839	736	583	2	0	0	0	2	11	0	3	88	102
Neb., Mo., Iowa	0	0	0	0	0	7	12	0	0	0	0	0	0	0	0	4	4
Oklahoma	45	27	5	‡13	151,996	880	877	0	0	2	2	4	26	0	12	108	146
Texas	175	108	10	57	796,170	3,019	2,719	5	0	0	33	38	76	14	9	463	562
North Central	69	32	1	‡36	187,668	1,057	775	2	0	0	19	21	22	0	0	191	213
West	39	36	0	3	197,817	637	729	2	0	0	3	5	22	0	0	67	89
Panhandle	3	2	1	0	6,753	138	217	0	0	0	0	0	0	0	0	4	4
Eastern	18	11	4	3	107,429	290	119	1	0	0	2	3	7	0	1	38	46
Gulf Coast	36	23	3	10	249,562	681	630	0	0	0	5	5	19	12	4	92	127
Southwest	10	4	1	5	46,941	216	249	0	0	0	4	4	6	2	4	71	83
Louisiana	29	14	3	12	166,806	495	345	0	0	0	7	7	24	5	3	65	97
Northern	19	6	3	10	82,060	259	112	0	0	0	6	6	4	0	0	36	40
Southern	10	8	0	2	84,746	236	233	0	0	0	1	1	20	5	3	29	57
Arkansas	3	1	0	2	12,235	69	64	0	0	0	2	2	2	0	0	10	12
Mississippi	7	6	0	1	63,238	90	130	0	0	0	0	0	1	0	1	22	24
Southeastern States	1	1	0	0	11,578	16	14	0	0	0	0	0	0	0	0	14	14
Montana	5	0	3	2	7,329	93	121	0	0	0	0	0	4	0	0	8	12
Wyoming	0	0	0	0	0	57	78	0	0	0	0	0	6	0	3	19	28
Colorado	2	1	0	1	8,231	44	10	0	0	0	1	1	2	0	0	7	9
New Mexico	3	1	0	2	16,495	140	189	0	0	0	1	1	2	0	0	16	18
California	31	20	4	7	125,336	692	891	0	0	0	6	6	4	0	2	85	91
Utah	0	0	0	0	0	2	2	0	0	0	0	0	1	0	0	1	2
Total United States	558	307	53	198	1,921,360	10,473	9,577	8	0	2	68	78	189	19	43	1,175	1,426
Total previous week	579	314	59	206	1,818,294	9,915	9,022	7	1	1	65	74	181	19	41	1,107	1,348
Total May 19, 1945	557	303	55	199	1,876,130	9,577	7,295	16	0	4	65	85	220	5	51	1,220	1,496

Service wells included: *13, †34, ‡1.

MARKET QUOTATIONS

(Quotations on other products than those shown here furnished on request. Quotations are f.o.b. plant in tank cars and in cents per gal. as of last Monday.)

REFINERY GASOLINE

Octane (A.S.T.M.)	78-80†	73-75
Mid-Continent*	6.125-6.375	5.375-5.750
Texas Gulf Coast	6.375	5.750
New York Harbor	7.375	6.375
California		6.00-6.875

*Basic Oklahoma Group 3. †1939 C.F.R. (research method).

NATURAL GASOLINE

Grades:	26-70	18-55
Oklahoma (Group 3)	3.000	3.600
N. Texas (f.o.b. plant)	2.500	3.000
N. Louisiana (f.o.b. plant)	2.875	3.375
California	4.875	5.500

CRUDE-OIL PRICES

Representative posted schedules per bbl

East Texas	$1.25
Conroe	1.53
Tepetate, Louisiana, avg. grav.	1.30
Illinois Basin	1.47
Pecos County, Texas	1.05
Bradford, Pennsylvania	3.10
Van, Van Zandt County, Texas	1.18

Note: Exclusive of subsidy.

GRAVITY SCHEDULES

Top prices include all gravities above grades designated, and low prices include all gravities below grades designated:

Gravity—	Signal Hill, Calif.	Okla-homa, Kansas	Gulf Coast Texas	West Tex.*
18-18.9	$0.90	....	....	....
19-19.9	.94	....	$1.16	$0.80
20-20.9	.98	$0.95	1.18	.83
21-21.9	1.02	.97	1.20	.84
22-22.9	1.06	.99	1.22	.86
23-23.9	1.10	1.01	1.24	.88
24-24.9	1.13	1.03	1.26	.90
25-25.9	1.17	1.05	1.28	.92
26-26.9	1.21	1.07	1.30	.94
27-27.9	1.25	1.09	1.32	.96
28-28.9	1.28	1.11	1.34	.98
29-29.9	1.30	1.13	1.36	1.00
30-30.9	1.33	1.15	1.38	1.02
31-31.9	....	1.17	1.40	1.04
32-32.9	....	1.19	1.42	1.06
33-33.9	....	1.21	1.44	1.08
34-34.9	....	1.23	1.46	1.10
35-35.9	....	1.25	1.48	1.12
36-36.9	....	1.27	1.50	1.14
37-37.9	....	1.29	1.52	1.16
38-38.9	....	1.31	1.54	1.18
39-39.9	....	1.33	1.56	1.20
40 and above	....	1.35	1.58	1.22

*Includes Lea County, New Mexico.

A.P.I. REFINERY REPORT

Week ended May 11, 1946

(Figures in thousands of barrels)

	Dly. crude runs to stills	Stocks: Gasoline	Distillate	Residual
East Coast	774	22,964	10,035	6,894
Appalachian	149	3,684	504	382
Ill., Ind., Ky.	787	21,516	4,117	3,104
Okla., Kan., Mo.	358	8,195	1,656	1,101
Inland Texas	211	2,950	311	715
Tex. Gulf Cst.	1,192	15,309	5,360	4,461
La. Gulf Cst.	334	3,953	1,858	1,621
N. La., Ark.	59	1,871	377	204
Rocky Mtn.	132	2,323	418	741
California	824	15,393	7,100	21,785
Total 5-11-46	4,820	98,158	31,736	41,008
Total 5- 4-46	4,672	98,548	31,487	40,212
Total 5-12-45	4,887	88,420	29,486	39,116

CRUDE-OIL STOCKS

(Bureau of Mines Estimate)

Week ended—	Bbl. of crude*
May 11, 1946	221,615,000
May 4, 1946	221,911,000
May 12, 1945	221,596,000

*Excludes unrefinable Calif. stocks.

TRENDS

DAILY AVERAGE PRODUCTION FOR WEEK

	May 18 crude oil	Bureau of Mines May demand	May 11 crude oil
Alabama	1,050	700	1,050
Arkansas	76,900	79,000	78,100
California	865,200	840,000	867,750
Colorado	28,080	23,000	27,360
Eastern	64,500	62,900	66,900
Florida	250	200	250
Illinois	208,200	204,000	209,600
Indiana	20,400	16,400	18,450
Kansas	261,350	252,000	245,300
Kentucky	30,200	30,000	31,500
Louisiana	*378,600	380,000	*378,500
North Louisiana	87,150	.....	87,050
South Louisiana	*291,450	.....	*291,450
Michigan	48,800	46,000	47,600
Mississippi	62,150	53,000	60,750
Montana	23,660	22,000	23,660
Nebraska	750	800	800
New Mexico	*94,500	99,000	*94,500
Oklahoma	373,400	370,000	373,250
Texas	*2,114,800	2,050,000	*2,114,800
East Texas	388,800	.....	388,800
East Central Texas	*142,100	.....	*142,100
North Central Texas	165,000	.....	165,000
Texas Panhandle	83,000	.....	83,000
West Texas	521,200	.....	521,200
Southwest Texas	*327,900	.....	*327,900
Texas Gulf Coast	*486,800	.....	*486,800
Wyoming	105,360	97,000	103,820
Total United States	*4,758,150	4,626,000	*4,743,940

Change from prev. week, up 14,210

Total production January 1-May 18† .....

Same period last year ..... 663,429,950 bbl.

*Revised to exclude condensate. †To be revised later.

CRUDE-OIL STOCKS 221,615,000 bbl. as of May 11—down 296,000 bbl. One year ago 221,596,000 bbl.

GASOLINE STOCKS 98,158,000 bbl. as of May 11—down 390,000 bbl. One year ago 88,420,000 bbl.

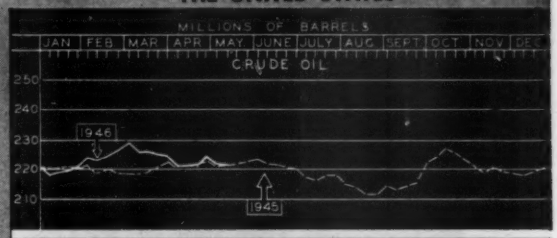
RESIDUAL FUEL-OIL STOCKS 41,008,000 bbl. as of May 11—up 796,000 bbl. One year ago 39,116,000 bbl.

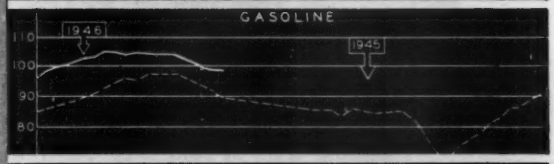
GAS OIL AND DISTILLATE STOCKS 31,736,000 bbl. as of May 11—up 249,000 bbl. One year ago 29,486,000 bbl.

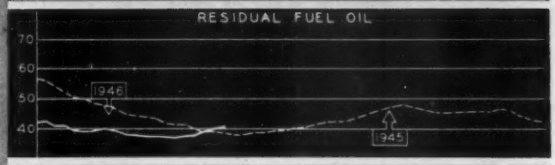
CRUDE-OIL PRODUCTION 4,758,150 bbl. as of May 18—up 14,210 bbl. One year ago 4,862,800 bbl.

REFINERY RUNS 4,820,000 bbl. daily week ended May 11—up 148,000 bbl. One year ago 4,887,000 bbl.

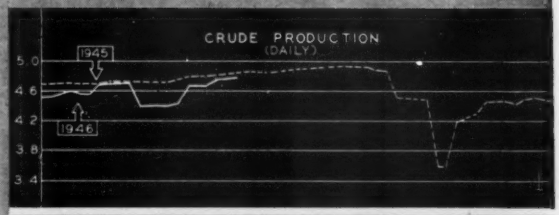
OIL STOCKS IN THE UNITED STATES

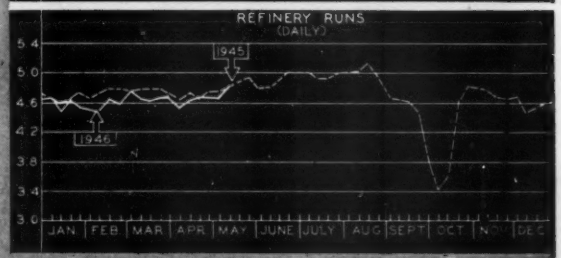




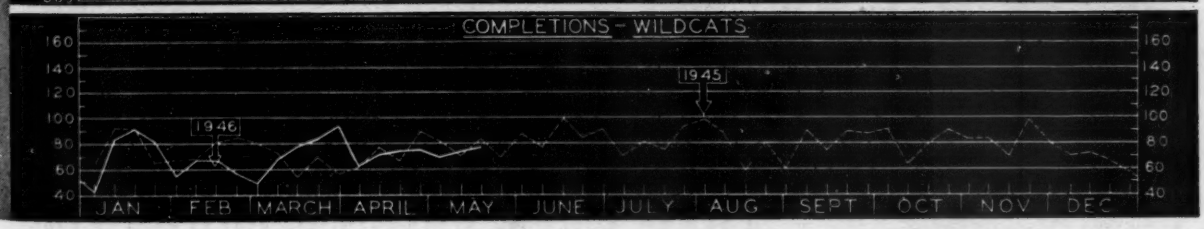


DAILY OPERATIONS





Solid line charts weekly completions, service wells in Eastern area included



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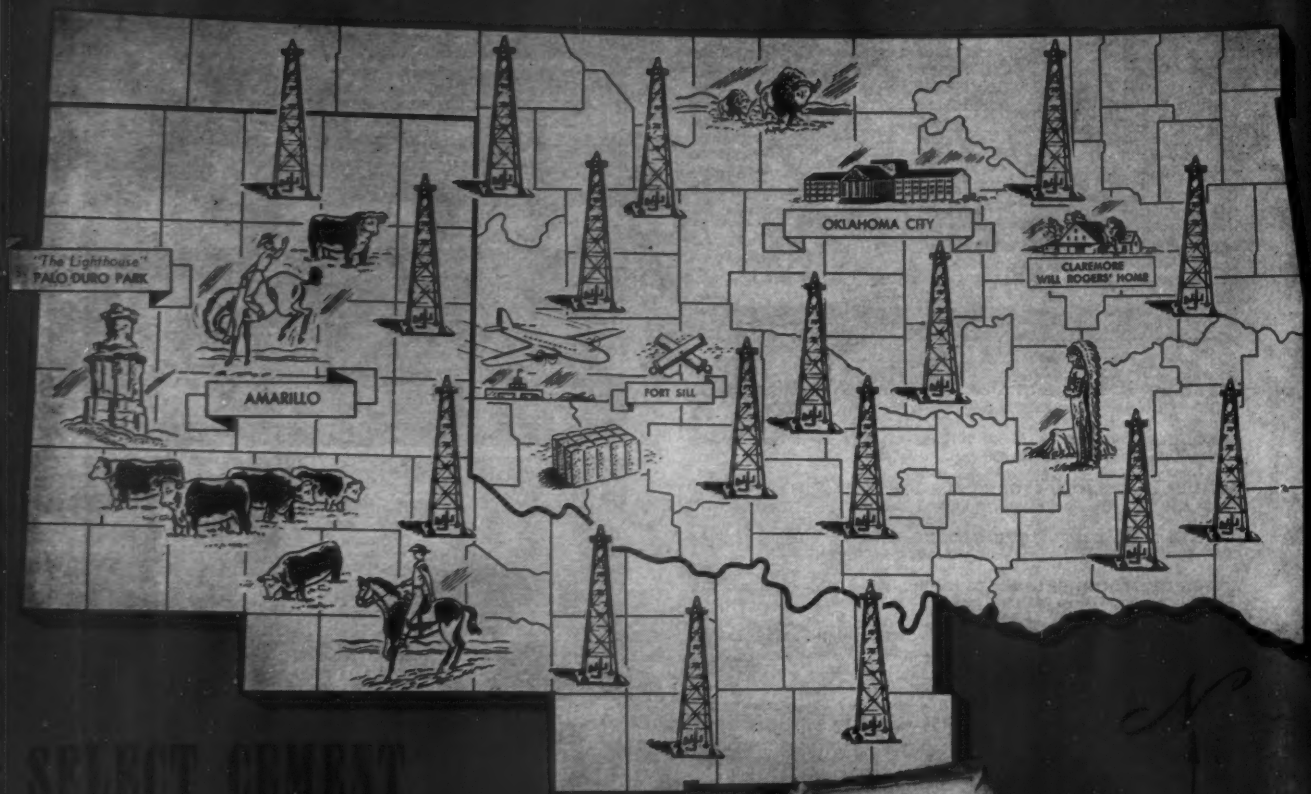

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Exploration and Drilling

Drilling Trends

THE middle of the second quarter of the first postwar calendar year is a good time to check on drilling trends. There was a confused period immediately after the opening of the year, when it became apparent that forecasts of demand for crude were unduly pessimistic. Obviously this upset the drilling budgets of the major companies and the more or less tentative plans of thousands of independent operators. By now the decisions made by all the individuals and companies have had time to be reflected in the completions, and some patterns for the next few months should be apparent.

Examination of well completions shows a fairly well-defined over-all trend. Total completions to date for 1946 are running about 10 per cent over last year; but this is the net result of an increase of about 12½ per cent in development wells and a decrease of about 4½ per cent in wildcat completions. The first conclusion is that such a slight decrease in wildcats from an all-time high record last year is much more optimistic than anyone might have expected 6 months ago. The second conclusion is that new discoveries of recent years must have been of better quality than the more pessimistic individuals realized; otherwise there would not be sufficient proven locations to permit a 12½ per cent increase in development completions this year.

There are some interesting geographic patterns. For instance, development completions are up, while wildcats are down or stationary in a territory that starts with the Appalachian, includes Michigan, Ohio, Indiana, Kentucky, Illinois, Kansas, Oklahoma, Arkansas, and North Central Texas. This may indicate ample proven territory for drilling all the wells operators want to drill, without any feeling of necessity for increasing wildcatting.

The opposite trend, development completions down and wildcats up, prevailed in California, the Rocky Mountain area, Southwest Texas, and South Louisiana. Varying conditions in each of these areas probably wind up with the same net result.

The most optimistic areas seem to be North Louisiana, East Texas, and the Upper Gulf Coast of Texas, where both development and wildcat completions are higher than last year.

On the face of the statistics, the most pessimistic areas seem to be New Mexico, West Texas, Panhandle of Texas, and Mississippi. In these areas both wildcat and development completions are down.

Undoubtedly there is a certain amount of oversimplification in these conclusions, and subsequent developments this year may alter the picture considerably as far as individual areas are concerned. It appears doubtful, however, that the general trend of increased development wells and slight decreases in wildcats will change.

MICHIGAN

Two Kent County Producers Stir Hopes of Field

SAGINAW.—Western Michigan this week took a share in the state's oil spotlight with two Kent County producers that stirred hopes of another new field, though experienced oil men were not inclined to be optimistic. Interest results from a strike by James J. McGerry of Grand Rapids in the Rockford city limits. The well was reported at 700 bbl. daily potential. A few days before Harris Oil Co.-Vance Oil Co. 1 McGrady, nearby, in Section 36, Algoma Township, flowed at a rate of 360 bbl. a day after acid treatment. There was some salt water. Depths were about 2,250 ft. More than 10 sq. mi. in the area are reported under lease. First production came about a year ago in Algoma when S. L. McCall of Milford got a 60-bbl. producer in Section 25. On this week's completions report were two other Algoma operations, both dry, one in Section 25, the other in Section 28.

Seventeen completions, including 4 oil wells, 3 gas wells and 10 dry holes were on the week's list. The bulk of activity was in Mecosta County, where in addition to five completions—two small gas wells, two dry holes and the Rex Oil Co. Wheatland gusher. Sun Oil Co. reported a deepening operation as unsuccessful. Sun's 1 Denslow in Section 1, Mecosta Township, was abandoned after deepening 1,000 ft. to 5,071 ft.

Operations for 1946 climbed to 243 during the week as 10 new locations were announced—2 in Mecosta County, 1 each in Arenac, Isabella, Montcalm, Wexford, Saginew, Allegan, Hillsdale and Missaukee.

MICHIGAN WILDCAT FAILURES

Allegan County, Fillmore Township: J. W. Lang Co. 1 Gerrit-Schrotenboer, SE SE SW 5-4n-15w, dry in Traverse limestone, TD 1,518 ft.

Bay County, Gibson Township: Shell Oil Co., Inc. 1 William E. Boling et al, NE NE NW 26-18n-3e, dry in Dundee, TD 3,310 ft.

Kent County, Algoma Township: Jones Development Co. 1 A. J. DeWilde, SW SW SW 28-9n-11w, dry in Traverse limestone, TD 2,265 ft.

Muskegon County, Holton Township: Edward J. Bouwsma 1 Dora and Hazel Devine, NE NW SW 8-12n-15w, dry, TD 2,020 ft.

Tuscola County, Ellington Township: Rowmor Corp. 1 M. & M. Skoropada, SE SW NW 9-13n-10w, dry in Dundee, TD 3,185 ft.

Van Buren County, Waverly Township: E. W. Leeder 1 Cora L. Crowell, NE NW SW 19-2s-14w, dry in Traverse limestone, TD 1,094 ft.

ILLINOIS

New Pay Zone Found In Hoosier Pool Area

MATTOON.—The N. V. Duncan 1 Nannie Gibson, NW NW SE 2-4n-7e, in the new Hoosier pool of Clay County, has added a new pay zone to the area. This well is now on a pumping test of the lower O'Hara lime at 2,892-2,902 ft., total depth 2,984 ft., and making about 12 bbl. an hour, the full capacity of the pumping equipment. Previously it swabbed at the rate of 25 bbl. of oil an hour.

The 1 Gibson is a diagonal offset of the discovery well of the pool, which was completed last month. One other well, a southeast extension in Section 12, has been completed in this field. With the exception of the 1 Gibson, the wells are producing from the Cypress sand at about 2,550 ft.

The B. M. Heath et al 1 Pyle heirs, SE SE NW 12-6s-8e, north extension of the Stokes pool, White County, has reperforated the Rosiclare pay at 3,105-11 ft. and testing is again under way. Following an acid treatment of 2,500 gal., the well is flowing at the rate of 10 bbl. of oil an hour.

Completions in Illinois during the past week totaled 41, including 23 oil wells and 18 dry holes. Of the 10 wildcats completed, 1 was successful and opened a new pool in Clinton County. Activity in the state is continuing at a high level, and completions during the month of April were the highest for any month since November 1944. Drilling in the Mattoon pool has leveled off, but the pool still leads in activity for the state. Among the smaller new pools Ingraham West is the most active. Extensions to the Calhoun and Gallagher pools, completed for initial productions of 1,305 and 786 bbl. respectively in the McClosky, have brought the pools within a mile of each other with active locations between.

ILLINOIS SUCCESSFUL WILDCAT

Clinton County: P. Doran 1 Thomas, NW NE NE 13-2n-1w, pumped 23 bbl., Weiler 1,417-23 ft., 5-qt. shot 1,419-23 ft., TD 1,423 ft.

ILLINOIS WILDCAT FAILURES

Edwards County: B. Lambert 1 Saucy, NE

NW NE 21-1n-10e, dry at 3,393 ft., Menard 2,420 ft., Glen Dean 2,675 ft., Barlow 2,867 ft., Cypress sand 2,894 ft., Paint Creek 3,062 ft., Ste. Genevieve 3,224 ft., Levias 3,259 ft., McClosky 3,293 ft., St. Louis 3,386 ft.

Franklin County: Robinson & Puckett 1-A T. J. Robinson, NW SE NW 13-7s-3e, dry at 3,050 ft., Menard 2,023 ft., Tar Springs 2,155 ft., Glen Dean 2,264 ft., Barlow 2,511 ft., Cypress sand 2,613 ft., Renault 2,793 ft., Ste. Genevieve 2,878 ft., Rosiclarge 2,916 ft., Fredonia 2,980 ft.

Gallatin County: Herndon-Slemaker 1 Downer, N½ NW SE 1-8s-9e, dry at 2,963 ft., Menard 2,132 ft., Tar Springs 2,190 ft., Glen Dean 2,247 ft., Golconda 2,370 ft., Cypress sand 2,525 ft., Paint Creek 2,593 ft., Benoist 2,672 ft., Aux Vases 2,785 ft., St. Genevieve 2,806 ft., McClosky 2,887 ft.

Liebernick & Dickerson 1 Miner, SE NE NE 28-8s-9e, dry at 2,187 ft., Vienna 2,112 ft., Tar Springs 2,170 ft.

Hamilton County: E. S. Adkins 1 Rubenacker, SW SE NE 31-3s-6e, dry at 3,444 ft., Menard 2,470 ft., Tar Springs 2,607 ft., Glen Dean 2,741 ft., Cypress sand 3,000 ft., Ste. Genevieve 3,318 ft., Fredonia 3,388 ft.

J. J. Lynn 1 P. Allen, SE SE SW 12-7s-6e, dry at 2,400 ft., Menard 2,321 ft., Tar Springs 2,462 ft., Glen Dean 2,587 ft., Hardinsburg sand 2,643 ft., Golconda 2,691 ft., Cypress sand 2,897 ft., Renault 2,180 ft., Aux Vases sand 3,211 ft., Ste. Genevieve 3,228 ft., Fredonia 3,258 ft.

C. H. Nickerson 1 Flannigan, SW NE SE 28-6s-5e, dry at 3,430 ft., Menard 2,384 ft., Glen Dean 2,626 ft., Barlow 2,906 ft., Cypress sand 2,912 ft., Paint Creek 3,042 ft., Aux Vases 3,234 ft., Ste. Genevieve 3,270 ft., Rosiclare 3,316 ft., Fredonia 3,341 ft., McClosky 3,357 ft.

Jasper County: Delta Drlg. et al 1 Raef, NW NW SE 35-6n-9e, dry at 3,202 ft., Glen Dean 2,545 ft., Barlow 2,680 ft., Cypress sand 2,778 ft., Ste. Genevieve 3,042 ft., Rosiclare 3,058 ft.

Wabash County: Collins Bros. 1 Sackileben, NW NW SE 33-1n-12w, dry at 1,524 ft., Glen Dean 1,014 ft., Barlow 1,157 ft., Cypress 1,234 ft., Renault 1,390 ft., Aux Vases 1,401 ft., Ste. Genevieve 1,489 ft.

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SOUTH LOUISIANA

Another Good Well Expected in Mamou

NEW ORLEANS.—Another good well is expected for the newly discovered Mamou field in Evangeline Parish. Magnolia Petroleum Co. 1 Brunet-Granger Unit, ¾ mile southeast of the 1 Morien discovery well, in 5-5s-1e, topped the first Wilcox sand at 11,544 ft., and had sands from there to 11,590 ft. with bottom 24 ft. being saturated. Operators cored to a total depth of 11,612 ft. where pipe is being set for completion. This is practically level with the discovery producer, which showed oil sand from 11,510-553 ft.

Also in Mamou pool in Evangeline Parish, Magnolia 1 L. F. Duos, SE SW 6-5s-1e, continues to drill, reporting sandy shale with sand at 12,101 ft. This well is credited with picking up sufficient shows in the discovery sand for production, and also two other deeper sands in the Wilcox horizon. The scheduled depth is 13,000 ft.

Sohio Petroleum Co. has completed the best well so far in the Bon Air field of Jefferson Davis Parish. The 2-B Claudius Fontenot et al, a west offset to the 1-B well, located in 16-10s-6w, gaged 259 bbl. of 38°-gravity pipe-line oil in 24 hours through a ½-in. choke with 1,175 lb. flowing pressure on the tubing, gas-oil ratio 634 to 1. Sands showing oil were picked up from 9,688-9,710 ft. Total depth is 9,757 ft. and 5½-in. casing is cemented 2 ft. off bottom. Production is through perforations at 9,701-03 ft.

Sun Oil Co. and Sohio Petroleum Co. 3 Elizabeth Regan, new deep sand producer in the Egan field of Acadia Parish, has beet shut in after failing to clean properly. The test flowed 400 bbl. of fluid, 50 per cent water through a 9/64-in. choke in 24 hours with 6,100 lb. flowing pressure on the tubing at the end of the 24-hour period. Balance of the flow was 43° oil. This flow is from a new deep pay for the field and pipe was perforated with 86 shots from 11,874-906 ft. for the test. Total depth is 13,500 ft. and 5½-in. casing is cemented to 11,986 ft.

Another Camerina sand producer for the Egan field has been completed by Sun and Sohio at 1-B Regan Unit, 31-9s-1w, which gaged 209 bbl. of pipe-line oil, 38° gravity, in 18 hours through a 9/64-in. choke with gas-oil ratio 962 to 1. Tubing pressure 700 lb. flowing. Production is through perforations at 10,086-094 ft.

Shell Oil Co., Inc. 1 Myles Salt Co., 13-14s-6e, in the deep Weeks Island field area of Iberia Parish, is new 13,500-ft. test to be drilled in the near future. Company tools will be used for the new venture.

Eleven new locations were reported this week, with only one wildcat in Avoyelles Parish. St. Marys Parish received two locations while Avoyelles, Calcasieu, Cameron, Jefferson Davis, St. Charles, St. Landry, St. Martin, and Terrebonne parishes received only one. Acadia Parish received three completions, St. James and St. Martin parishes each received two completions, while Plaquemines, St. Charles, and St. Mary parishes received only one each.

WILDCAT FAILURE IN SOUTH LOUISIANA DISTRICT

St. James Parish: T. G. Markley 1 Cyrial

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Lv. Kansas City..10:00 AM
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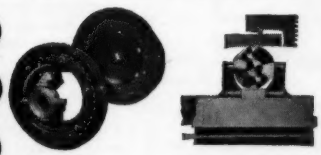

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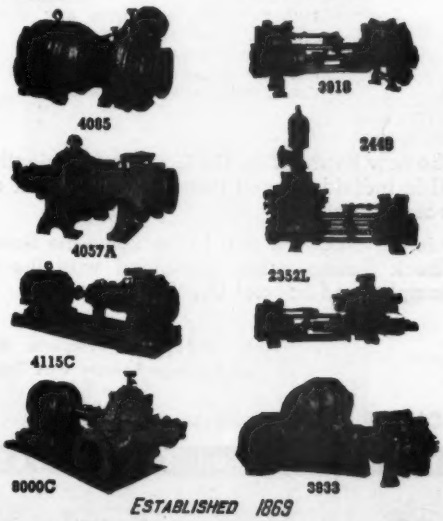

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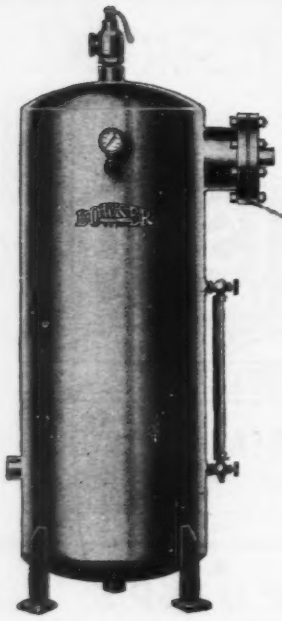

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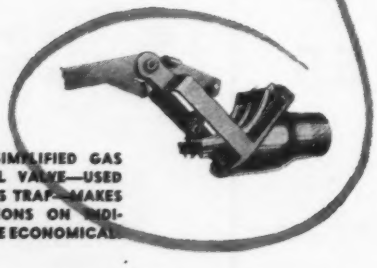
FIG. 426 GAS TRAP



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TEXAS GULF COAST

New Pay Opened at South Liberty Pool

HOUSTON.—A new oil pay has been opened at South Liberty pool of Liberty County by the Sun Oil Co. 12 Shade fee, in the David Minchey League. On a potential test, the well flowed 103 bbl. of 37°-gravity pipe-line oil in 24 hours through a ⅛-in. choke with 810 lb. flowing pressure on the tubing. Total depth is 4,900 ft. and production is from the Cook Mountain through 119 perforations at 4,585-4,615 ft. Gas-oil ratio is 1,291 to 1.

Humble Oil & Refining Co. 35-A State-Galveston Bay, east extension in the Redfish Reef field in Galveston Bay, Chambers County, has been completed as a gas-condensate producer. On an initial test the well flowed 75 bbl. of 51°-gravity condensate along with 1,446,000 cu. ft. of gas daily through a ¼-in. choke, having 3,600 lb. flowing pressure on the tubing. Production is through a total of 63 perforations shot from 11,038-48 ft. and 11,066-67 ft. Total depth is 11,242 ft. and 5½-in. casing is cemented on bottom. This possibly is a new sand for the field, being 75 ft. lower than the deepest production in the field which topped the sand at 10,990 ft.

Stewarts 15 fee, east outpost test to the Hitchcock field in Galveston County, in James Spillman Survey, flowed on potential gage 111 bbl. of 33°-gravity oil daily through a 7/64-in. choke with 2,450 lb. pressure on the tubing and 1,425 lb. casing pressure. Gas-oil ratio 1,289 to 1. This is the second well for the field in the new deep 6,500-ft. sand, being perforated with 13 shots from 6,521-25 ft. for completion. Sand and shale showing oil was cored from 6,511-59 ft. Total depth is 6,559 ft.

Dick Schwab 1 O. H. Caldwell, wildcat test about 3 miles south of the Fairbanks field in Harris County, in A. G. Holland Survey, is nearing the 8,500-ft. contract depth. Operators are preparing to run electrical log. This test attempted to blow out while drilling at 8,315 ft. and it is reported to have shown some oil and gas before being controlled.

Floyd L. Karsten is drilling ahead in his 1 J. J. Menke (Roy Chapman), wildcat test 2 miles southwest of Hempstead in Waller County. A core from 7,510-20 ft. recovered sandy shale with odor of gas and a very slight condensate show. A core taken from 7,530-40 ft. recovered 3 ft. of sand with condensate saturation and gas show. Hole was cored ahead to 7,690 ft. with sands with odor of oil and salty taste from 7,670-90 ft. Operators will continue to drill ahead until a depth of 8,300 ft. is reached where an electrical log will be run.

T. S. Loffland has staked locations for two more tests in the extension area to the North Thompson field in Fort Bend County. The 2-A Annie E. Williams and 3-A Annie E. Williams are each on a 20-acre unit in the Thos. Barnett Survey. Both tests are contracted to 8,500 ft.

Humble will make another attempt to open deep flank production in the Sugar Land pool of Fort Bend County. Its 2-C Sugarland Industries is located in the E. Alcorn Survey, Abstract 1, and will be drilled to 11,000 ft.

There were 12 new locations reported this week with 1 wildcat in Wharton County. Eleven oil wells were completed with four dry holes reported. Jackson County led with three completions with Brazoria and Wharton counties each receiving two.

WILDCAT FAILURE IN UPPER GULF COAST TEXAS

Jackson County: Martin Thompson 1 Mrs

E. H. Duenow, in Geo. Ewing Sur., Abst. 20, 1⅞ mi. S of Lolita field, dry, TD 6,529 ft.

N. CENTRAL TEXAS

Oil Production Promised For Knox County

WICHITA FALLS.—Cities Service Oil Co. 1 Mulkey, Section 163, Block 44, H&TC Survey, wildcat 2 miles south of Truscott, promises the first oil production for Knox County. It was drilled to 6,785 ft. and perforated with 60 shots from 6,224-40 ft. in the Bend conglomerate section of the Pennsylvanian. Combination packer was set at 6,222 ft. and the well was swabbed down. The well kicked off and flowed by heads at the rate of 40 bbl. of oil daily, but was making too much drilling mud. The packer was reset at 6,110 ft. and the pay section treated with 500 gal. of acid and then washed with 500 gal. of mud acid. It was put on the swab again and was swabbing through the tubing.

Operators have released samples and details of shows on Standard Oil Co. of Texas 1 Mitchell, wildcat 1½ miles northwest of Sherman, Grayson County. Base of Cretaceous and top of the Strawn was logged at 2,370 ft. Tentative base of Strawn and top of black shale was logged at 6,840 ft. It had sand showing oil from 4,296-3,340 ft., 4,923-4,945 ft., 4,960-5,009 ft., 5,049-72 ft., and 5,170-82 ft. There was broken sand and conglomerate showing oil from 5,269-88 ft. and sand showing oil from 5,378-97 ft. There was sand with some shale streaks showing oil from 5,435-66 ft. and sand showing oil from 5,524-31 ft. and 5,535-41 ft. There was conglomerate with no shows from 5,541-48 ft. and dry sand from 5,698-5,707 ft. From 5,715-41 ft. and 5,758-70 ft. there was sand showing oil and tight sand showing oil from 5,798-5,807 ft. It has been drilled to 8,180 ft. and is reaming at 8,030 ft.

J. R. and Adam Seitz 1 Glen Davis, T. Rutledge Survey, Abstract 866, wildcat 5 miles east of Gainesville, eastern Cooke County, logged showing of oil from 2,360-68 ft. On a 6-minute drill-stem test of the section recovery was 493 ft. of oil and 12 ft. of oil-cut drilling mud. Other oil shows were encountered while drilling deeper. On another 6-minute drill-stem test from 2,754-62 ft. recovery was 190 ft. of salt water. The test then logged sand showing oil from 2,950-59 ft. and on a 10-minute drill-stem test recovered 45 ft. of oil in 10 minutes. It was drilling below 3,034 ft.

Electra field, Wichita County, had five completions this week; Holliday field, Archer County, and Knox field, Young County, had three and Gatewood and Wilson fields, Cooke County, and Crain field, Young County, each had two. Electra field had six locations, Wilson field three and National field, Wilbarger County, and Holliday field each had two. National field and Cooper field, Archer, have eight drilling wells; Knox field and Sivell's Bend field, Cooke County, each six; Nocona field, Montague County, five, and Hildreth field, Montague County, four.

In West Central Texas Shackelford County Regular field had two completions, Reddin field, Taylor County; Wild field, Stephens County; and Cooper field, Jones County, each had one. Reddin and Ingram fields, Taylor County; Cooper field and Palo Pinto County Regular field each had one location. Stephens County Regular field has four drilling wells; Cisco field, Eastland County, three, and Silver Valley field, Coleman County; Loving field, Stephens County, and Reddin field, Taylor County, two each.

NORTH CENTRAL TEXAS SUCCESSFUL WILDCATS

Archer County: New oil pool—Smiley-Norwood Drilling Co. 1 A. L. Harris, Blk. 71, Harris Subd., 6½ mi. W and 1½ mi. S Archer City, pumped 45 bbl. day, perf. 1,126-35 ft., TD 1,135 ft.

H. W. Snowden et al 1 J. E. & E. H. Morrison, Sec. 1823, TE&L Sur., 2 mi. S and W Westfork, elev. 1,137 ft., flowed 206 bbl. day through 16/64-in. choke, perf. 4,495-4,520 ft. Caddo, gravity 41.5°, gas-oil ratio 400 to 1, TD 5,236 ft.

NORTH CENTRAL TEXAS WILDCAT FAILURES

Archer County: W. T. Hutchinson 2 A. L. Harris, Blk. 60, J. W. Harris Subd., 1½ mi. west and 6½ mi. north Archer City, dry, TD 1,430 ft.

Clay County: L. T. Burns 2 Sanzenbacher, Levi N. Sparks Sur. A-401, 4½ mi. E and 1½ mi. S Blue Grove, elev. 942 ft., Caddo 5,692 ft., dry, TD 6,500 ft.

Wayne McCormick 1 R. Graf, Sec. 76, Parker CSL Sur., 4 mi. S and E Petrolia, dry, TD 315 ft.

Wayne McCormick 1 E. L. Holloway, Sec. 61, Parker CSL Sur., 3½ mi. S and 2½ mi. E Petrolia, dry, TD 180 ft.

Cooke County: Norwood & Anderson 2 M. W. Thompson, T. Bell Sur. A-52, 1½ mi. E and 1 mi. S Leo, dry, TD 1,121 ft.

Foard County: Seaboard & Shamrock 1 J. M. Speck, Sec. 25, Blk. 44, H&TC Sur., 8 mi. W and 3½ mi. S Crowell, elev. 1,588 ft., Ellenburger 6,605 ft., dry, TD 6,633 ft.

Jack County: Hanlon-Buchan et al 1 J. A. Burt, J. Anderson Sur. A-15, 7 mi. S and 2½ mi. E Antelope, Dry, TD 386 ft.

Hanlon-Buchanan et al 2 J. D. Gillispie, J. B. McNeil Sur. A-1796, 4½ mi. N Jermyn, dry, TD 600 ft.

Hanlon-Buchanan et al 1 Ova Jackson, Sec. 2, SPRR Sur. A-2201, 4 mi. E and 4½ mi. S Antelope, dry, TD 600 ft.

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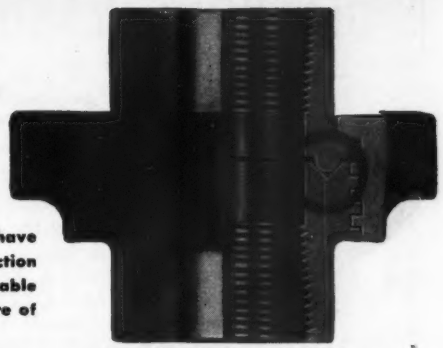

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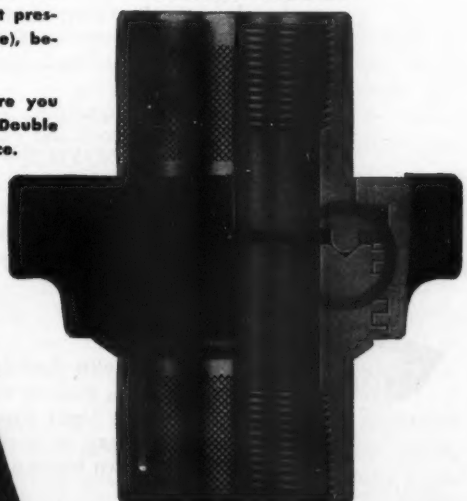

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Hanlon-Buchanan et al 1 Mrs. M. E. Munson, Sec. 1, TCRR Sur. A-2046, 5½ mi. E and 3 mi. S Antelope, dry, TD 600 ft.

Knox County: J. W. Hastings et al 1 L. J. Kuhler, Sec. 2, Blk. 2, D&WRR Sur., 2 mi. E and 1½ mi. N Goree, dry, TD 1,706 ft.

Throckmorton County: R. Olson Oil Co. 1 M. G. Cheney, Sec. 1621, TE&L Sur., 9 mi. S Throckmorton, Caddo 4,152 ft., dry, TD 4,244 ft.

Young County: Davis Investment Co. 1 G. C. Kindley, Sec. 471, TE&L Sur., 3 mi. W and 5 mi. N Graham, elev. 1,068 ft., Mississippian 4,677 ft., Ellenburger 4,820 ft., dry, TD 4,854 ft.

WEST CENTRAL TEXAS WILDCAT FAILURES

Eastland County: Texas Pacific Coal & Oil 1-F Allen, J. H. Price Sur., 6 mi. SE Ranger, elev. 1,193 ft., Mississippian 3,003 ft., Ellenburger 3,521 ft., dry, TD 3,787 ft.

Jones County: Oscar Donley 1 Prichard, Sec. 24, Blk. 15, T&P Sur., 3½ mi. N Hawley, elev. 1,735 ft., dry in Swastika, TD 2,770 ft.

Mills County: M. M. Miller, Tr., 1 Savoy, E. M. Pease Sur. A-528, 10 mi. NW Goldthwaite, elev. 1,518 ft., Ellenburger 2,064 ft., Hickory 4,217 ft., dry, TD 4,217 ft.

Parker County: Bradley-Kimbrough 1 Gilbert, GWT&P Sur. No. 1, 10¼ mi. SW Millsap, dry, TD 1,552 ft.

Shackelford County: Mass-Tex Oil & Gas 1 Eliza Brazzell, Sec. 1554, TE&L Sur., elev. 1,251 ft., Mississippian 4,382 ft., Ellenburger 4,465 ft., dry, TD 4,517 ft.

Taylor County: H. W. Snowden Oil & Gas 1 Jones, Sec. 4, Blk. 9, SPRR Sur., 5 mi. SE Blair, Upper Hope 2,865 ft., dry, TD 3,226 ft.

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In recommending DEFENDER, he states: "It compares very favorably with some of the high tin-base metals."

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MM-102

MAGNOLIA BEARING METALS

SOUTHWEST TEXAS

New Frio Pool Opened In Jim Wells County

CORPUS CHRISTI—A new Frio pool has been opened in Jim Wells County by Ralph E. Fair 1 Reynolds & Richardson, approximately 6,500 ft. northwest of the Magnolia City field, and 6 miles southeast of Alice. This test was perforated in the 5,400-ft. Frio pay sand and flowed at a daily rate of 100 bbl. of pipe-line oil and no water, through a 5/32-in. choke. On first test through perforations at 5,403-14 ft. salt water broke in, but this was squeezed off successfully. Total depth is 5,883 ft. with 5½-in. casing set at 5,456 ft. Fair is now moving rig on to his 1 Wm. Filter, new test in W. N. Staples Survey, Abstract 436, 2,350 ft. northeast of the 1 Reynolds & Richardson, which lies in southeast corner of J. Poitevent Survey 205.

A discovery well in Dimmit County, Barnsdall Oil Co. 1 Henrichson, 2 miles southeast of Valley Wells, is making gas completion in a Wilcox sand logged at 3,994-4,034 ft. after tests down the hole failed to bring in oil production. Total depth is 5,280 ft. with 5½-in. casing on the bottom. Several tests in the sand at 5,214-30 ft. failed, and a good test on the sand, through perforations at 5,215-21 ft. showed salt water, and a light show of gas. Another test through perforations at 5,168-77 ft. tested dry.

In the Carrizo Park area of Dimmit County, Humble Oil & Refining Co. 1 Mrs. Kate Bradshaw, wildcat, has indicated possible oil production for this area on a drill-stem test at 2,807-13 ft. which recovered 235 ft. of oil and 5 ft. of mud and water. This test is located in Lot 7 of T&NO Survey 15.

Sun Oil Co. 3 B. G. de Garcia, deep wildcat test approximately 3,500 ft. southwest of the Yturria field in Starr County, Porcion 98, is reported to have blown out at total depth of 6,330 ft. and blew for 8 hours before being brought under control and flowing through ½-in. choke with 2,200 lb. casing pressure during that time. Operators are now conditioning mud.

Bridwell Oil Co. 1 J. W. Baird, extension well at Sliva field in Bee County, a mile west of the 1 Sliva oil-discovery well, gaged 997,500 cu. ft. of gas per day plus 18 bbl. of condensate through a 5/32-in. choke, with tubing pressure 1,625 lb., casing pressure 1,675 lb. through perforations at 4,392-95 ft. in the top of the Vicksburg sand. Total depth is 4,407 ft. with 5½-in. casing set to bottom.

Potential gage on the Bridwell 1 Sliva, discovery well of Sliva field, shows the flow settled down to 10 bbl. of oil per day through a 7/64-in. choke, gas-oil ratio 8,500 to 1, gravity 48°, no water. Tubing pressure was 825 lb., and casing pressure 975 lb. through perforations in the Stillwell sand at 4,377-88 ft. Total depth 4,555 ft. This well is in the F. O. Skidmore Survey 4.

Magnolia Petroleum Co. 1 Proctor has been completed as the second deep oil producer on southeast flank at La Gloria field in Brooks County. Total depth is 7,213 ft. and perforations were at 7,195-7,205 ft. On drill-stem test it flowed 28 bbl. of pipeline oil in 4 hours through a ⅛-in. choke, with no water, 900 lb. working pressure and gas-oil ratio of 520 to 1. Operators ran tubing and completed. It is now waiting on potential gage.

An extensive shallow-drilling campaign is planned for the Gas Ridge field of Bexar County. H. A. Pagenkopf et al, who re-

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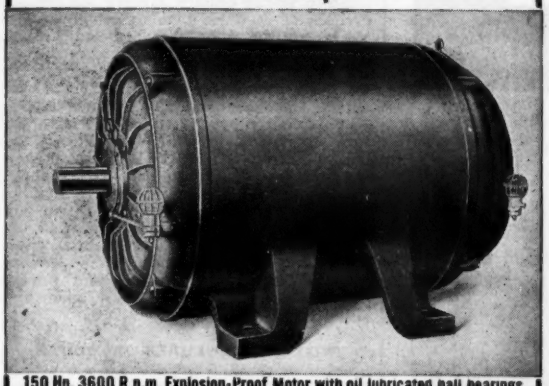

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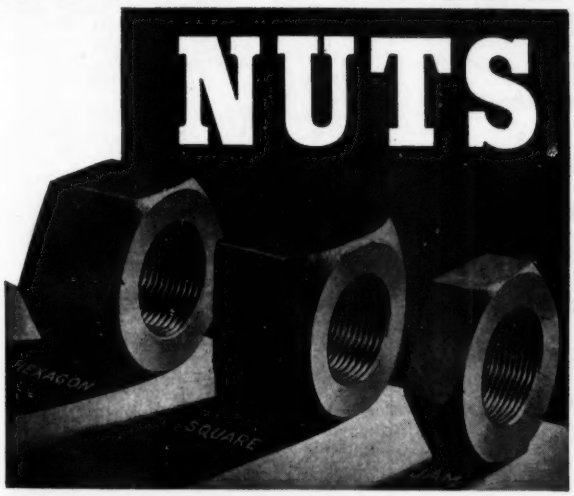

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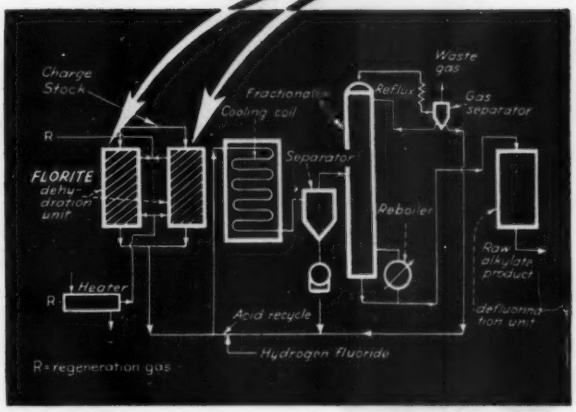

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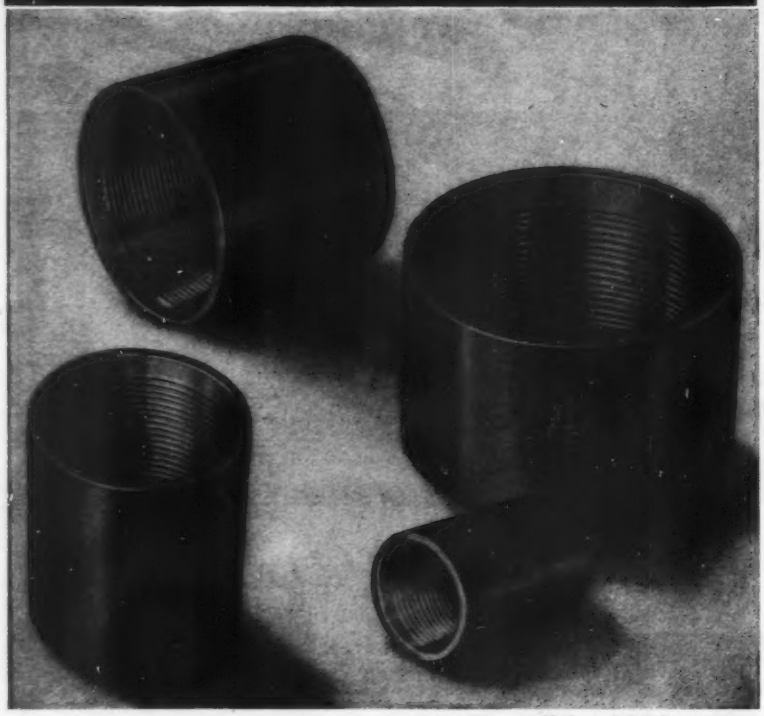

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cently drilled a deep test in this field but failed to develop deep production, are starting the first of a series of possibly 100 shallow 475-ft. oil tests in the field. Southwest Drilling Co. recently staked nine more tests on its Mathilda H. Covell et al 400-acre lease, in the southeast portion of it, in Lucas Munoz Survey 86, all 475-ft. tests.

Also, two shallow wildcat tests have been announced for the area south of San Antonio in Bexar County. George Parker and Charles L. McCune 1 F. Cunningham is a 500-ft. test 10 miles south of San Antonio and 1 T. J. Goad, in J. M. Urriegas Survey.

The name "Hirsch" has been given the field discovered by Sun Oil Co. 2 Isaac Hirsch, in Mary Latham Survey 2030, in Webb County, by the Oil Field Nomenclature Committee of the South Texas Geological Society.

A total of 54 locations were reported this week, 17 being wildcats, 3 in Starr County, and 2 each in Bexar, Duval, and Jim Wells, 1 each in Atascosa, Calhoun, Frio, Guadalupe, Live Oak, Medina, Travis and Webb counties. There were 31 completions with Duval, Nueces, and Refugio counties receiving the greatest amount of activity.

WILDCAT FAILURES IN SOUTHWEST TEXAS

Bee County: Houston Oil Co. and Humble 1 Mrs. M. M. McKinley, in L. C. Randolph Survey, in Pettus area, dry, TD 8,686 ft.

Bee County: Tom Slick 1 Rosie E. Borroum et al, Geo. J. Brown Survey, 5 mi. N of Mineral, dry, TD 6,940 ft. Stuck drill pipe, unable to recover.

Duval County: Frank J. Gravis 1 Becher, BS&F Survey 531, 2 mi. N of Benavides, dry, TD 4,515 ft.

Chas. H. Houston and W. T. Farrier 1 Mucio Ruiz, in Sur. 44, 15 mi. NW of San Diego, dry, TD 1,300 ft.

Gonzales County: Amerada Pet. Corp. 1 Henderson et al Unit, in James Gibson Sur., Abst. 23, 5 mi. SE of Waelder, dry, TD 10,902 ft.

Karnes County: Jay Simmons 1 J. R. C. McDougal et ux, Wm. H. Leckie Sur., 2½ mi. SE of Runge, dry, TD 7,215 ft.

San Patricio County: Southern Minerals Corp. 2 Katherine Clifton, James B. Wilson Sur., 1 mi. S of Tynan, dry, TD 5,305 ft.

Webb County: Blanco Oil Co. and Al Buchanan 2 Marrs McLean, in Albercas Grant, 8 mi. SW of Bruni, dry, TD 2,615 ft.

APPALACHIAN FIELD

Activity in Opening New Reserves Continues High

PITTSBURGH. — In Ravenswood district, Jackson County, West Virginia, United Fuel Gas Co. is drilling through the Oriskany sand in the test 5,741 Barbara Perry with the Corniferous lime topped at 4,787 ft., Oriskany 4,886 ft. and 622,000 cu. ft. gas showing at 4,901-11 ft. Here, United Carbon Co. topped the Corniferous lime at 4,953 ft. in the test 1,328 J. H. Waskey and is drilling at 5,053 ft.

In Ripley district, Jackson County, United Carbon Co. bottomed the test 1,399 L. M. Parsons at 5,031 ft. through the Oriskany 4,924-60 ft. with no showing of gas, oil, or water.

In Union district, Putnam County, Godfrey L. Cabot, Inc. topped the Corniferous lime at 4,709 ft. in 1,195 Putnam Co. and set 5-in. casing at 4,731 ft.

Activity in opening new reserves in the southern part of the state continues at a high rate with 32 drilling in Wyoming County, 5 in Raleigh County, and 6 in

Logan County. In the Oriskany extension to the Elk-Poca field, 12 are being drilled.

During the week 13 new locations were announced scattered in Sherman district, Boone County; Sherman district, Calhoun County; Ripley district, Jackson County; Elk district, Kanawha County; McKim district, Pleasants County; Curry district, Putnam County; Warren district, Upshur County; Lincoln district, Wayne County; Green district, Wetzel County; Oceana district, Wyoming County.

In southwest Pennsylvania, eight new locations were staked in Boggs and Mahoning townships, Armstrong County; Porter Township, Clarion County; Luzerne Township, Fayette County; Morgan Township, Greene County; East Pike Run Township, Washington County; Allegheny Township, Westmoreland County.

ROCKY MOUNTAIN

Iles Test Gets Water In the Weber

DENVER.—The Weber sand test of Stanolind Oil & Gas Co. 1 Madison, NW SW SE 22-4n-92w, Iles field, Moffat County, Colorado, after showing favorable indications of a discovery in the upper sections of that horizon, encountered water which threw a damper over earlier hopes. The top of the Weber was at 4,572 ft. Drill-stem tests showed better than 50 ft. of saturated sand ranging from oil stains in tight sections to one recovery of a bleeding core. Before running into water, a drill-stem test at 4,596-4,622 ft., open 1 hour, recovered 270 ft. of clean oil and 480 ft. of oil-cut mud, with bottom-hole flowing pressure of 240 psi. and a shut-in pressure of 1,860 psi., the oil being 32.2° gravity.

Another test at 4,596-4,623 ft., open 1 hour, recovered 90 ft. of oil and 660 ft. of oil and gas-cut mud. Test at 4,624-55 ft. failed; and the next one reported, 4,619-55 ft., open 1 hour, recovered 300 ft. of mud and 390 ft. of water. The last one at 4,652-92 ft., open 40 minutes, recovered 390 ft. of mud and 3,996 ft. of water. At last report it was drilling ahead at 4,692 ft., still in sand, with the Madison at around 6,570 ft. as the final objective. The full significance of the test is not apparent as additional oil-saturated sections below the water remain a possibility.

Pure Oil test.—Pure Oil Co. 1 Unit, NE NE NW 18-48n-92w, River Dome, a basinward structure, Washakie County, Wyoming, which has been delayed several weels in testing the Embar horizon as a result of frozen hydrates inside the tubing and between the tubing and the casing, has cleared up the difficulties and is preparing to pull the tubing.

High well at Garland.—Ohio Oil Co. 14 Kinney-Coastal-Ohio Unit, SW NE SE 30-56n-97w, Garland field, flowed 370 bbl. per day on final test and is being completed in the Tensleep at 4,292 ft. This well shows the oil belt around the gas cap on top of the structure is much higher than heretofore logged. It topped the Tensleep at 4,112 ft., approximately 65 ft. above sea level as compared with —5 ft. in the highest oil well heretofore drilled. It is the third Tensleep well in the field to be completed as a flowing producer.

Rangely well is puzzling.—Cobb-Stringer-Newton 1-D Government, SE SE 4-1n-102w, an outpost on the south flank of the Rangely field more than a mile from the nearest producer, has proven an enigma which may not be solved until samples are analyzed and correlations made with other wells in the field. The facts generally agreed upon are that the total depth of the well is 6,859 ft., and that cores from the bottom show saturation.

The elevation is 5,205 ft., which puts the bottom of the hole at —1,654 ft., compared with —1,158 ft. in the deepest hole on the north side which had water at the bottom of the Weber. Two 12-ft. sections were cored at 6,835-59 ft., and 5 ft. of saturated cores were recovered from each, indicating 24 ft. of saturation. The cores showed no water and its absence was confirmed in subsequent tests. Hole is being reamed and prepared for a drill-stem test.

The location was made on the theory that it was on the west side of a hidden fault and this appears to have been confirmed with indications that part of the hole is in a fault zone. The top of the Weber has not been definitely determined due to different interpretations of the cuttings. While the bottom appears to be in a true sand, no one is willing to be quoted on saying it is the upper or lower Weber or some unidentified horizon. If it is completed as a producer it may develop an entirely different picture of that area. The cores showed dips up to as high as 30 degrees.

Deeper pay at Cut Bank.—Union Oil Co. 1 Stufft, C SW NW 19-36n-5w, after having a show of gas in the top of the Madison lime at 3,018 ft., drilled to 3,097 ft. and has 700 ft. of oil in the hole. No swabbing test has been made. It may open a deeper pay in the northern part of the Cut Bank field in Montana. Location is 2 miles south and east of Carter Oil Co. 1 Brindley, the Madison lime discovery in that area.

New operations.—Eleven new operations were reported, of which three are in Colorado, three in Wyoming, and five in Montana. The Colorado locations are in the Rangely field; the Wyoming locations include one development well in North Bax-

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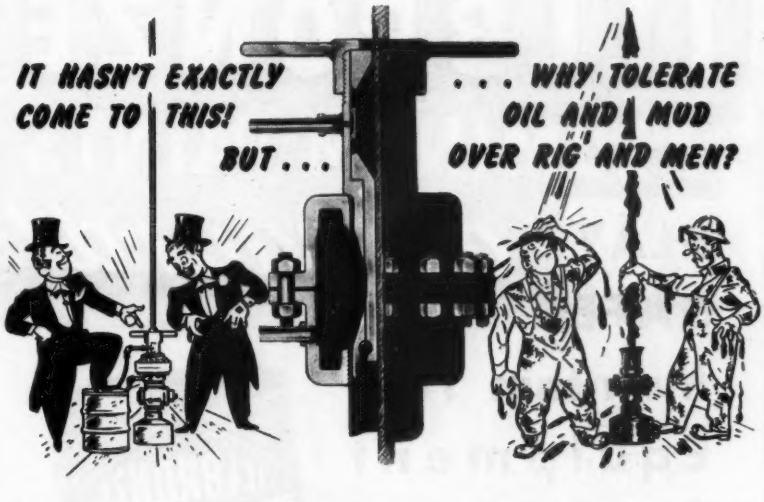

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ter Basin and two wildcats, one in the Big Sandy Unit Area in Carbon County, and one on the Table Rock structure in Sweetwater County. The Montana locations include two in Cut Bank, two in Cat Creek and one in Cedar Creek.

Completions—Seven wells were completed, of which one was an oil well in the Rangely field in Colorado for 648 bbl., three were gas wells and three were dry holes. There were no completions in Wyoming. Montana had two small gas wells completed in Cedar Creek and one for 11,600,000 cu. ft. by Union Oil Co. in Cut Bank. Two dry holes were completed in Kevin-Sunburst and one, a wildcat, in Colorado.

COLORADO WILDCAT FAILURE

Sullivan Park, Pueblo County: Continental Oil Co. 1 State, NE NE SE 4-18s-67w, TD 1,938 ft., top of granite 1,780 ft., no Pennsylvanian in place, dry and abd.

CALIFORNIA

Exploration in Northwest Receives Setback

LOS ANGELES.—Exploration work in Washington and Oregon received a little setback this week when Standard Oil Co. of California announced it was abandoning the Ferndale Community test in Whatcom County, Washington, at 6,230 ft. and Texas Co. prepared to abandon work on its Cooper Mountain test in Clatskanie County, Oregon, at 9,263 ft. Richfield Oil Corp. is temporarily held up with mechanical trouble in Barber 1 Multnomah County, Oregon, at 6,522 ft. Union Oil Co., some time ago, appointed W. L. Stanton resident geologist for Oregon and Washington with headquarters at Olympia, Wash., but has made no commitments to date.

Standard's test was started November 12, 1945, and the company reports that at no time was there any showing of oil or gas. Electric-log and formation tests were made several times and considerable coring was done. This test was drilled in Pleasant Valley northwest of the town of Ferndale and before starting actual work the company made an extensive geophysical survey of the surrounding Birch Bay area, a few miles south of the Canadian border. The first few hundred feet of hole penetrated was through glacial drift and subsequently all drilling was through nonmarine Chuckanut formation of sandstone and shale. Cores taken at various depths showed a certain amount of plant life and carbonaceous material but no marine fossils were found. The Chuckanut formation persisted to bottom and was quite tight. Thin seams of coal were encountered at various depths.

This exploratory work was undertaken as a consequence of favorable results of geophysical work and the fact that showings of gas in shallow wells near Bellingham indicated a possibility that with deeper drilling production of oil or gas might be expected. This abandonment is Standard's first dry hole in the Pacific Northwest and additional drilling depends upon further geological reconnaissance. It is not likely that any additional work will be done in the Ferndale area. The abandonment of work on Cooper Mountain marks the second unsuccessful wildcat drilled by Texas Co. This general area is so large, however, that a few dry holes by no means lead to the assumption that the entire area is barren.

Belridge Oil Co. has landed pipe in its deep test in the South Belridge field of Kern County, California, at 10,370 ft. This casing is a protection string but some showings will be tested on the way out if the lower sands prove barren. The objective at present is the prolific Wagonwheel sand of possible Eocene or lower Miocene age. Belridge owns a major part of the anticline in fee. Drilling operations have been delayed for several years and with North Belridge quite badly depleted, the company has decided to test out deep zone possibilities at South Belridge.

Richfield Oil Corp. is putting the finishing touches on 1 Keller in the East Los Angeles field. Casing was landed several days ago after the company succeeded in recovering the electric-log instrument that had been lost. Top of the first sand was logged at 7,200 ft. and it is the present intention to complete this well in the Union Pacific zone. A successful completion would extend the limits of production about ¼ mile northward. As this field develops, it appears more and more evident that the productive zones underlie the town lot area north of the present productive area. This subdivided area contains many modern homes and probably cannot be developed except by directional drilling and under strict regulation.

Western Gulf Oil Co. should have its Paloma outpost well on production within another week as it has been in the pay for some time. It has already shown a potential in excess of 500 bbl. per day and since that time some additional oil sand has been cored to 11,684 ft. Permeability and porosity are average for the field. This well is 76-1 Los Angeles Athletic Club in Section 1-32s-26e, and its completion will add about 120 acres to the field total.

Locations again this week were just about offset by completions, indicating an equilibrium. On the whole, however, there has been a reduction in drilling during the past several months especially in wildcat work. Recent locations indicate a slight increase can be expected in prospecting work during the next several months.

CALIFORNIA WILDCAT FAILURES

Kern County, Kern Bluff: Tide Water As-

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sociated 27-31 M. & T., 31-28s-29e, bottomed in gray sand, top upper Vedder sand 2,701 ft., top lower Vedder 2,955 ft., both sands barren, left fish in hole, TD 2,967 ft.

Sheep Springs: Miller & York 1 Anderson, 20-29s-21e, bottomed in hard barren shale, no showings, TD 3,343 ft.

Kings County, Corcoran: Four Star Oil Co. 1 Corcoran Irrigation District, 24-20s-22e, bottomed in tight gray sand, only minor showings, TD 6,050 ft.

Los Angeles County, La Habra: Standard 1 Gerrard Comm., 11-3s-11w, bottomed in hard gray sand, no important showings, TD 7,043 ft.

San Luis Obispo County, Cholame: H. E. Dawson 3 Dumplin, 3-25s-16e, bottomed in hard gray sand, only minor showings, TD 1,501 ft.

Tulare County, Ducor: Gene Reid Drilling Co. 1 Wing, 22-23s-27e, bottomed in schist, no showings, TD 2,321 ft.

EASTERN TEXAS

Bowie Wildcat Preparing For Completion Gage

DALLAS.—Barnsdall Oil Co. et al 1 Ivy Pickering, R. E. Sevey Survey, Bowie County wildcat 4 miles southwest of Texarkana, with total depth of 7,503 ft., plugged back to 7,088 ft. and ran 5½-in. casing to 7,030 ft. It was being acidized preparatory to taking completion gage. W. B. Hinton 1 J. O. Betts, A. S. Beard Survey, wildcat 4 miles southeast of Marietta, Cass County, was drilling below 5,900 ft. with no shows reported.

Failure for Cherokee County is Clark & Cowden 1 Southern Pine Lumber Co., N. Newton Survey, wildcat 6 miles southwest of Rusk. It was drilled to 5,104 ft. with no shows. Hunt Oil Co. 1 T. G. Andrews, Jose Pineda Survey, Cherokee wildcat 2 miles west of Jacksonville, was drilling below 5,385 ft. in shale.

Humble Oil & Refining Co. 1 R. G. Freeman, J. Little Survey, Abstract 37, wildcat 2 miles south and slightly east of Brushy Creek, Anderson County, was drilling below 12,580 ft. in sand with no shows reported. Beacon Oil & Refining Co. 1 Fryman, Culbreath Survey, ½-mile south extension to the Henderson pool of Rusk County, has been completed to flow 150 bbl. of 42.5° gravity oil in 24 hours through ⅛-in. tubing choke. Production is from the Pettit from 7,328-34 ft. after treatment with 1,000 gal. of acid. Gas-oil ratio was 755 to 1.

Carthage field, Panola County, and Hawkins field, Wood County, each had four completions this week and Calvert field, Robertson County, had two. Hawkins field had seven locations and Carthage field had two. Carthage field has 28 drilling wells, Hawkins field 24, New Hope field, Franklin County 6 and Sand Flat field, Smith County, 4.

EASTERN TEXAS SUCCESSFUL WILDCAT

Smith County: New oil pool—Humble 1 T. J. Pool, Wm. Saunders Sur., 4½ mi. W and slightly south of Mt. Sylvan, elev. 454 ft., flowed 522 bbl. day through ¼-in. choke on tubing, perf. 7,339-52 ft., Paluxy, gravity 34.6°, gas-oil ratio 145 to 1, tubing pressure 400 lb., casing pressure 460 lb., TD 7,668 ft.

EASTERN TEXAS WILDCAT FAILURES

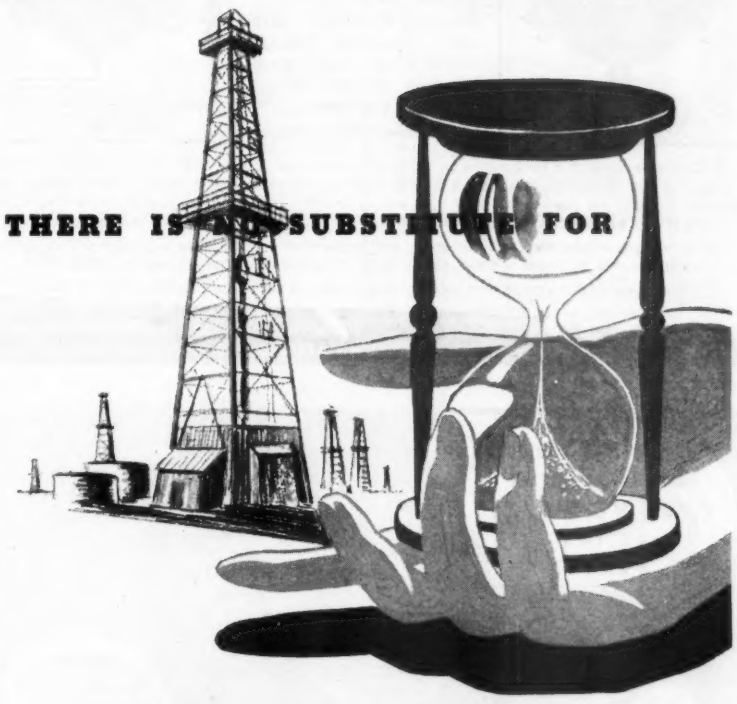
Van Zandt County: Delta Drilling Co. 1 S. A. Martin, A. T. Fowler Sur., 4 mi. S Tundra, elev. 533 ft., Pettit 8,805 ft., Travis Peak 8,923 ft., dry, TD 9,010 ft.

V. J. Meyer 1 A. W. Meredith, R. C. Morris Sur., 3 mi. W Edgewood, elev. 512 ft., Pettit 7,878 ft., Travis Peak 7,992 ft., TD 8,170 ft.

Look Ahead With First National

In

OIL FINANCING



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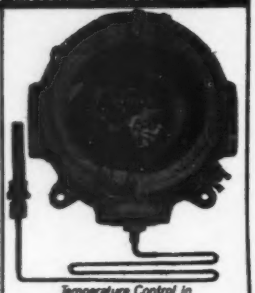

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PERMIAN BASIN

New Producing Area Opened in Andrews

MIDLAND.—Hunt Oil Co. 1 E. R. Hill, Section 9, Block B-11, Public School Land Survey, southeastern Winkler County wildcat 8 miles south and slightly east of Kermit, ran a 2-hour drill-stem test of the Tubb zone of the Clear Fork section from 6,606-6,202 ft. and recovered 310 ft. of heavily oil-and-gas-cut drilling mud and 310 ft. of slightly oil-cut drilling mud heavily cut with gas. On a later 2-hour drill-stem test from 6,208-6,318 ft., recovery was 290 ft. of slightly gas-cut drilling mud and 2,070 ft. of salt water. Operator is preparing to run electrical survey.

Humble Oil & Refining Co. 1 Pio Crespi, Section 19, Block 38, T-2-S, T&P Survey, 1 mile northwest of the discovery of the Midland pool, Midland County, recovered 2,000-ft. water blanket cut with oil and 900 ft. of thin drilling mud cut with gas on a 2-hour drill-stem test from 11,490-620 ft. On a 23-minute drill-stem test from 11,520-575 ft. recovery was 2,000-ft. water blanket and 10 ft. of drilling mud. It was drilling below 11,591 ft. in chert and lime. Devonian was reported entered between 11,410-420 ft. Elevation is 2,702 ft.

Superior Oil Co. of California 1 Eva B. Coopwood, Section 4, Block A-41, Public School Land Survey, opening a new Tubb producing area south of the multiple-pay Fullerton field in Andrews County, has been completed to flow 691 bbl. of 42.1-gravity oil daily through ½-in. choke on 2-in. tubing. Gas-oil ratio was 1,275 to 1. Pay was topped at 6,885 ft. Shell Oil Co., Inc. 1 A. Nelson, Section 8, Block A-40, Public School Land Survey, prospective pool opener in the Ellenburger 2⅞ miles east of the Lea County, New Mexico, line, but in Andrews County, was drilling below 10,554 ft. in dolomite and chert.

Cities Service Oil Co. 1 J. E. Parker, Section 20, Block 44, T-2-S, T&P Survey, central Ector County wildcat 1½ miles west of the Harper (San Andres) pool, ran a 101-minute drill-stem test of the lower Devonian and the upper Silurian from 10,965-11,253 ft. and recovered 240 ft. of slightly gas-cut drilling mud. The Devonian was topped at 10,320 ft. and the Silurian at 11,-145 ft. Elevation is 3,117 ft. Operator was drilling ahead. John Murchison 1 George C. Fraser (Texas), Section 7, Block 45, T-2-S, T&P Survey, Devonian discovery 4 miles south and slightly west of the TXL pool in western Ector County, has run 5½-in. casing for completion attempt. On a 1-hour drill-stem test from 8,504-64 ft. there was gas to the surface in 5 minutes, mud in 30 minutes and oil-cut mud in 40 minutes followed by clean oil. Operator flowed the well into pits approximately 19 minutes, making estimated 25 bbl. of oil an hour. Gravity of the oil was 40°. Devonian was topped at 8,510 ft.

Garza field, Garza County, had four completions this week, and Fullerton field, Andrews County, TXL-Ellenburger, Ector County, and Slaughter field, Cochran and Hockley counties, each had three. Garza field had eight locations, Welch field, Dawson County, three, and Iataan E. Howard field, Howard County, and TXL field each had two. TXL field has 37 drilling wells, Keystone-Ellenburger field, Winkler County, 27; Fullerton field, 26; Block 31 field, Crane County, 20; Welch field, Dawson County, 10, and Todd Deep field, Crockett County, 8.

WEST TEXAS SUCCESSFUL WILDCATS

Hale County: Extension to old oil pool—Stanolind 1 Lee Irish, Sec. 18, Blk. DT, HE&WT Sur., 3 mi. E Anton pool, Lamb County, elev. 3,428 ft., pumped 354 bbl. day through 2-in. tubing at

5,860 ft. Clearfork, top of pay 5,511 ft., gravity 32°, gas-oil ratio 150 to 1, TD 5,881 ft.

Mitchell County: Extension to old oil pool—Hickok & Reynolds 1 Floyd A. Langley, Sec. 25, Blk. 29, T-1-N, T&P Sur., 1½ mi. NW Westbrook pool, elev. 2,154 ft., pumped 56 bbl. day through 2-in. tubing, perf. 2,259-3,151 ft. Clearfork, gravity 2,715 ft., TD 3,151 ft.

WEST TEXAS WILDCAT FAILURES

Crockett County: Loffland Bros. 2 V. B. Cox, Sec. 27, Blk. 2, I&GN Sur., 15 mi. SE Ft. Lancaster, elev. 2,180 ft., dry, TD 1,067 ft.

Mitchell County: Stanolind 1 B. F. Dunn, Sec. 64, Blk. 30, Lavaca Nav. Co., 6 mi. SW Sharon Ridge pool, elev. 2,228 ft., Clear Fork 2,970 ft., dry, TD 5,500 ft.

Yoakum County: J. M. Murchison et al 1 E. E. Kirkpatrick, Sec. 66, Blk. D, John H. Gibson Sur., 2 mi. S Landon field, elev. 3,803 ft., San Andres 4,440 ft., dry, TD 5,194 ft.

SOUTHEASTERN NEW MEXICO

HOBBS.—Union Oil Co. of California has staked a 4,000-ft. wildcat in central Lea County, 2 miles west and 1 mile north of the West Eunice field. It is 1-B State, 1,980 ft. from the south line and 660 ft. from the west line of 3-21s-34e. Magnolia Petroleum Co. 11 Argo-Brunson, 9-22s-37e, ⅜-mile extension to the Brunson (Ellenburger) field in east central Lea County, has been completed to flow 1,632 bbl. of 42.3° gravity oil in 24 hours. Gas-oil ratio was 1,048 to 1.

SOUTHEASTERN NEW MEXICO WILDCAT FAILURE

Lea County: Lion Oil Co. 1 Wylie, 5-23s-38e, ½ mi. E Drinkard (Yeso) field, elev. 3,385 ft., McKee 8,041 ft., Ellenburger 8,396 ft., granite 8,518 ft., dry, TD 8,396 ft.

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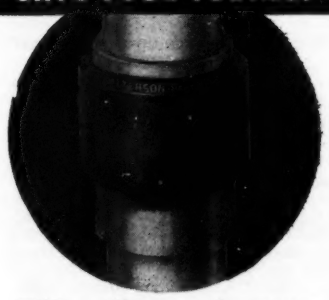

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LA.-ARK.

Big Creek Field May Have West Extension

SHREVEPORT.—Prospects look good for an extension of production in the Big Creek field, Richland Parish, 1½ miles to the west. The well is the R. T. Sellars 2 Ford, SE SW SW 1-16n-7e. After perforations at 2,834-41 ft., tubing was run and the well was washed into production. High water has delayed testing.

The J. B. Warmack & W. C. Partee 1 Grayson, SE SW NW 36-14s-20w, Stephens-Smart field, Nevada County, Arkansas, had 1,300 ft. oil in the hole after perforations at 2,026-44 ft. Total depth was 2,572 ft. with casing set at 2,092 ft. Operators are waiting on standard rig.

North Louisiana had 19 completions of which 6 were dry wildcats. Of the 13 field wells, 6 made oil, 3 gas and 4 were dry. Arkansas had three completions with two dry wildcats and one producer in the Stephens field.

ARKANSAS WILDCAT FAILURES

Ouchita County: J. L. Foster and Tom Green 1 Campbell, NE NE NW 10-15s-19w, dry at 4,312 ft.

Hunt Oil Co. 1 J. H. Dawson, NW NW 14-15s-18w, dry at 5,780 ft.

NORTH LOUISIANA WILDCAT FAILURES

Bossier Parish: Barnsdall, Sohio and Continental Oil Co. 1 Crystal fee, SE SW 28-21n-11w, dry at 9,074 ft.

C. C. Lowery 1 Levy, 330 ft. north and 1,650 ft. west of southeast corner of 7-19n-11w, dry at 2,310 ft.

Grant Parish: Jacob Brothers 1 Swope Estate, 1,665 ft. north and 1,633 ft. west of southeast corner of 18-9n-1e, dry at 4,315 ft.

La Salle Parish: Joe F. Belt et al 1 Urania L. Co., NW NE 3-6n-2e, dry at 4,514 ft.

Natchitoches Parish: Magnolia Petroleum Co. 1 U. S. M., NW NE 7-6n-6w, dry at 9,548 ft.

Richland Parish: H. W. Todd et al 1 Chalder-Hill, 330 ft. north and 585 ft. west of southeast corner of 13-16n-7e, dry at 3,534 ft.

OKLAHOMA

New Discoveries in Prospect For Central Oklahoma

ALTHOUGH Western Oklahoma operations have attracted the attention of operators during recent months, the central counties of the state last week held a major portion of the interest with several discoveries and potential discoveries becoming apparent. One of the new pools was a Misener-Hunton pool in Lincoln County, discovered by the Sam A. King 1 Earlabaugh, SW SE NE 34-13n-5e. On initial tests this well flowed at the rate of 300 bbl. of oil and 10,000,000 cu. ft. of gas daily before being shut in for tankage. The Hunton was topped at 4,295 ft.

Second of the potential discoveries was the J. F. Smith and Continental Oil Co. 1 Klingensmith, SW SW SE 23-8n-2e, which recovered 2,280 ft. of 41°-gravity oil from the Wilcox on a drill-stem test at 5,632-39 ft. Wilcox was topped at 5,632 ft. and hole was bottomed at 5,639 ft., with 7-in. casing set to 5,636 ft. Tanks are being connected.

Two new pools are looming in Osage County. The Texas Co. 1 Smith, a semi-wildcat in SE SE NE 17-23n-7e, recovered 120 ft. of oil and 120 ft. of oil-cut mud from the Arbuckle lime topped at 3,073 ft., while the Continental Oil Co. 3 Osage, NE

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Additional Information and Photographs

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Incorporated

Jeffersonville, Indiana

SW NW 24-23n-3e, in the extreme western part of the county, bailed and flowed 80 bbl. of oil on an 18-hour test at plugged-back depth of 3,832 ft. Testing of the 3 Osage is being continued.

OKLAHOMA SUCCESSFUL WILDCATS

Hughes County: Skelly Oil Co. 1 Price, SW NE NW 26-8n-10e, 10,000,000 cu. ft. gas from upper Viola at 3,330-60 ft., TD 3,482 ft.

Oklahoma County.: Mid-Continent 1 McKee, NE NW SE 21-14n-2w, 2,500,000 cu. ft. gas from Bartlesville at 5,780-5,810 ft., TD 5,991 ft.

OKLAHOMA WILDCAT FAILURES

Creek County: R. O. Bailey 1 Cory, SW NW SW 20-16n-10e, dry at 2,858 ft., sand 2,825 ft.

Hughes County: Barco and Conoco 1 R. B. Parks, NE NW SE 3-6n-8e, dry at 2,864 ft., Booch 2,740 ft.

KANSAS

Saline County Wildcat Pumps Oil and Water

FLUID consisting of 105 bbl. oil with 45 bbl. water is being pumped every 24 hours at the W. J. Page & L. Walker 1 Haag, NW SW SE 32-14-2w, wildcat in Saline County. Producing zone is the Viola lime at 3,346-52 ft. Attempts are being made to exhaust the water. The wildcat is 2½ miles south of production in the Salina pool.

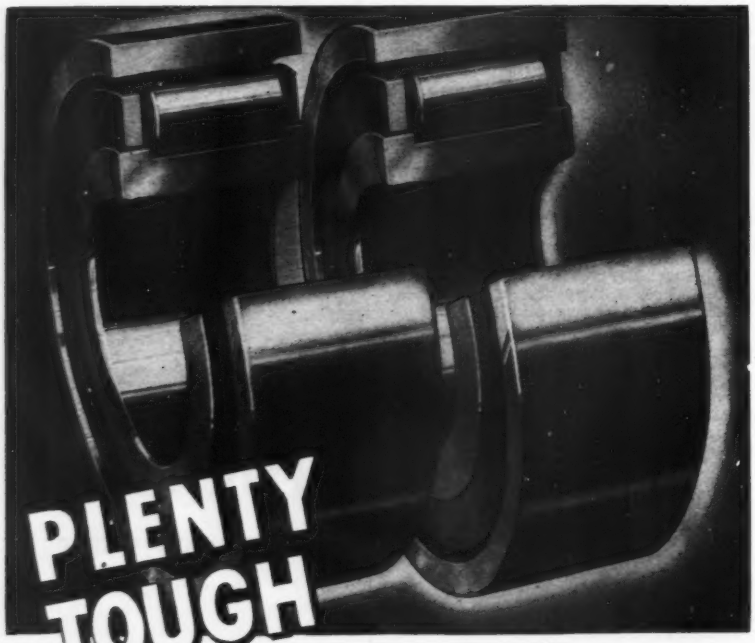
The Cities Service Oil Co. 1 Kipp, NE NE NE 23-25-14w, wildcat, looks good as a new pool opener for Stafford County. After perforating the pipe in the Lansing lime at 3,844-63 ft., the hole filled with oil. Total depth is 4,303 ft. with pipe cemented at 3,973 ft. Preparations are being made to move in pumping equipment. The Lansing was topped at 3,659 ft., Viola 4,145 ft., Simpson sand 4,217 ft. and Arbuckle at 4,257 ft. The test is 1 mile north and 1 mile east of the Kipp pool.

Kansas reported 32 completions. The two wildcats made oil. Of the 30 field completions, 19 were oil, 2 gas and 9 dry.

KANSAS SUCCESSFUL WILDCATS

Sedgwick County: Beech Aircraft Corp. 2 Hinkle, SW NE NE 1,000 ft. south and 360 ft. west of northeast corner of 1-27-1e, 828 bbl. from Burgess sand at 2,984-95 ft., TD 2,995 ft.

Stafford County: Alkay Oil Co. 1 Gray, SW NE NE 11-24-13w, 480 bbl. from Lansing-Kansas City at 3,743-62 ft., TD 3,882 ft.



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AMERICAN Heavy-Duty ROLLER BEARINGS

OHIO, KENTUCKY

Clinton Sand Productive In Muskingum County

COLUMBUS.—B. G. Bartley et al for the third time have found the Clinton sand productive of gas while drilling for Medina sand oil in Salt Creek Township, Muskingum County. Their 1 Kenneth Morrison logged the sand at 4,222-55 ft. and gaged 3,500,000 cu. ft. natural with 1,300 lb. pressure.

The upper end of the North Wellington pool in Lorain County was widened a half mile by the Ohio Fuel Gas Co. 1 H. T. Breyley, Lot 158, Pittsfield Township. First Clinton at 2,227-41 ft. gaged 3,720,000 cu. ft. natural.

Five locations were staked at Somerset in Perry County, to keep that area one of the most active of the state. A total of 27 locations were reported with Lancaster field having 7, Cambridge and Stewart 5 each, and the remainder scattered. Twenty-eight wells were completed with Cambridge leading with eight.

WILDCAT FAILURES COMPLETED IN OHIO

Ashland County, Milton Township—Ringler et al 1 Wm. McQuate, Sec. 12, Clinton, no sand, TD 2,575 ft.

EASTERN KENTUCKY

ASHLAND.—Three gas completions, totaling 927,000 cu. ft. in open flow, highlighted eastern Kentucky field operations during the week, with Kentucky-West Virginia Gas Co. credited with all of them.

Well No. 808 on the Perry Cline property, Pike County, total depth 1,946 ft., was completed for 355,000 cu. ft. in big lime; well No. 5299, Richard Hall (O.W.D.D.), Knott County, 2,686 ft., for 245,000 cu. ft. in shale, after shot, and well No. 5583, W. R. Hopkins property, Floyd County, 3,226 ft., for 327,000 cu. ft., after shot.

WESTERN KENTUCKY

OWENSBORO.—Routine development activity continued in western Kentucky during the past week with no important showings found in any of the wildcat tests now under way in the state. Completions showed a slight upward trend with five new oil wells and two dry holes reported. Four new wells were started during the week, all located in Henderson County.

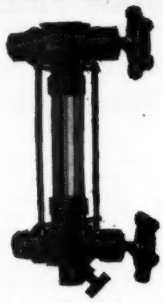
INDIANA

EVANSVILLE.—Although development activity in Indiana continues to remain at a relatively high peak, exploration is at a low ebb with only a few wildcat tests under way. In Gibson County the Continental Oil Co. 1-D Cooper estate, SW SW 13-3s-14w, first deep test in the Griffin pool, is

PENBERTHY

"ALL IRON"

LIQUID LEVEL GAGES



Body made from a special high strength alloy iron, shanks alloy steel and trim stainless steel. Extra heavy construction throughout, automatic and positive shut-off if glass breaks, heavy duty stuffing boxes. Conform with A.P.I.—A.S.M.E. requirements.

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DETROIT, MICH. — Canadian Plant WINDSOR, ONTARIO

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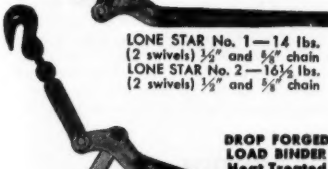
MIDGET (1 swivel) ¼" chain
DELTA (1 swivel) 5/16" chain
DIXIE (2 swivels) 5/16" chain

MALLEABLE IRON LOAD BINDER Heat Treated

LONE STAR No. 1—14 lbs. (2 swivels) 1/2" and 5/16" chain
LONE STAR No. 2—16½ lbs. (2 swivels) 1/2" and 5/16" chain

DROP FORGED LOAD BINDER Heat Treated



No. 1—10 lbs. (2 swivels) 3/8" and 1/2" chain
No. 2—17½ lbs. (2 swivels) 1/2" and 5/8" chain

STEEL CONSTRUCTION WIRE STRETCHERS

No. 3	—3 Pulleys,	plain bearings,	3/8" rope
No. 33	—3 Pulleys,	roller bearings,	3/8" rope
No. 4	—4 Pulleys,	plain bearings,	3/8" rope
No. 44	—4 Pulleys,	roller bearings,	3/8" rope
No. 88	—4 Pulleys,	roller bearings,	1/2" rope

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● If you live near a large city, how long does it take you to reach the airport through traffic from mid-town? Or if your home is in a smaller town, how much time do you lose in getting to a point on one of the air lines? Fortunately, *helicopter* feeder-taxi service is being developed as the solution to these difficulties.

A notable flight is recorded in the picture above—the first direct helicopter trip from Philadelphia's Southwest Airport to a roof in the center of that city. Mail was picked up and delivered to a waiting Europe-bound air liner. The distance this helicopter flew is 4 miles. The flight took 4 minutes. By city streets the trip is 8 miles—*and takes 25 minutes!* Yet Philadelphia is fortunate in having its airport much nearer mid-town than most cities.

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Kellett is the oldest manufacturer whose aircraft design-production program is exclusively in the helicopter field. We now plan to offer air travelers large, dependable, 10 passenger helicopters. They will save you time *and money* in getting to air line points from which you may wing around the world—or to the state capital—on the regular air transport lines, which give you speed and service with safety.

Kellett is a Contract Manufacturer, too, making such products as deep freeze units, metal tanks and assemblies, electrical units and agricultural machinery and aircraft parts.

KELLETT AIRCRAFT CORPORATION, NORTH WALES, PA.

KELLETT
HELICOPTERS

drilling below 4,140 ft. with the Devonian expected at approximately 4,550 ft.

Indiana completions during the past week totaled 13, with 9 oil wells and 4 dry holes. No wildcat completions were reported. Twelve new operations were announced, one each in Gibson and Pike counties and the remainder in Posey County.

CANADIAN FIELDS

Test in Mackenzie River Area Is Unsuccessful

CHATHAM.—Imperial Oil, Ltd., reports abandonment of its most recent test in the Mackenzie River area, Redstone 1. Drilled about 150 miles upstream from Norman Wells, Redstone 1 was carried to 4,874 ft., testing formations from the Cretaceous to the Silurian. No favorable indications were met, and coring demonstrated the most likely horizons were exceedingly dense and lacking in porosity.

W. L. Taylor of Calgary, in charge of western Canada exploration work for Imperial, has indicated that drilling outside the proven Norman Wells field will be discontinued with completion of Redstone 1. No strikes have been made outside the proven field, where 63 producers have been completed.

Antelope Hills.—In the Antelope Hills area, between the Saskatchewan River and the Alberta-Saskatchewan border, Trans Alberta-Alliance 1, LSD 15, 19-20-1w4, has encountered small oil and gas shows in the anhydrites just above the Devonian, and later cored into the Jefferson lime of the Devonian series at 3,804 ft., cores showing porosity and light green oil saturation. Major zones of production are looked for at 3,830 and 3,885 ft.

Moose Dome.—On the Moose Dome, in the foothills northwest of Calgary, Elbow Falls 2-A, LSD 4, 28-22-6w5, has repaired split casing and is testing a strong wet gas flow at 3,080 ft.

Gaspe.—In the Gaspe Peninsula of Quebec, Gaspe Ventures 1 has spudded with 16-in. hole. Location is in isolated territory and before materials could be moved in, a road had to be constructed. The Gaspe Peninsula had been a recognized potential field for many years and prior to 1900 a large number of wells, mostly shallow, were drilled by English interests, numerous oil shows being met while several wells approximated commercial production. It is believed that in the light of more definite geological knowledge and more careful preliminary investigation wells correctly located on structure will get commercial production if drilled to a sufficient depth. It is planned to carry the well to 2,355 ft. with limestone contact expected at 2,000 ft.

MISSISSIPPI

Yazoo County Wildcat Has Oil and Gas Show

JACKSON.—A drill-stem test at 6,502-76 ft. in the basal Eutaw horizon recovered 60 ft. of drilling mud with a trace of gas and 90 ft. of mud with heavy black oil at the Southern Natural Gas Co. 2 Gammill Investment Co., SE SW NE 6-9n-4w, wildcat in Yazoo County. The Wilcox was topped at 2,470 ft., Midway at 4,766 ft., Chalk at 5,632 ft., and the Eutaw at 6,157 ft. Operators are reaming at 6,576 ft.

Seven field and no wildcat completions were reported from Mississippi. Brookhaven had two producers and one dry hole. Cranfield added two oil wells. Fayette and Tinsley each had one producer.

Summary of April Completions

	Comp.	Oil	Prod.	Gas	Dry	Under 1,000 ft.	1,000-2,500 ft.	2,500-5,000 ft.	5,000-10,000 ft.	Over 10,000 ft.	Total footage	Rigs and drilling
New York	132	61	137	4	*67	0	132	0	0	0	227,871	149
Pennsylvania	311	168	504	8	†135	28	260	23	0	0	461,134	237
West Virginia	54	3	42	43	8	2	23	28	1	0	150,672	81
Ohio	88	29	573	35	24	12	30	45	1	0	227,302	198
Indiana	30	19	3,398	0	11	0	23	7	0	0	66,760	76
Kentucky	34	13	1,906	11	10	1	23	10	0	0	70,806	53
Illinois	232	133	15,428	0	99	3	98	131	0	0	593,863	240
Michigan	45	12	815	4	29	1	24	20	0	0	105,315	234
Kansas	127	68	29,721	14	‡45	0	8	115	4	0	429,829	263
Neb., Mo., Iowa	1	1	75	0	0	0	1	0	0	0	2,287	10
Oklahoma	163	92	14,901	11	§60	5	48	86	24	0	526,396	447
Texas	606	385	96,886	33	¶188	44	156	213	176	17	2,580,816	927
North	166	80	13,357	0	86	33	85	34	14	0	377,241	169
West Central	47	22	3,203	2	23	3	25	16	3	0	117,914	62
West	127	109	48,734	1	17	2	22	62	35	6	616,306	249
Panhandle	30	16	1,457	9	5	0	3	25	2	0	98,296	00
Eastern	51	42	15,947	2	7	1	3	35	11	1	264,979	127
Upper Gulf Coast	57	32	4,902	9	16	1	1	7	39	9	422,358	91
Lower Gulf Coast	74	57	7,281	9	8	1	0	14	58	1	479,263	116
South	36	19	1,571	1	16	0	14	14	8	0	131,103	23
South Central	18	8	434	0	10	3	3	6	6	0	73,356	30
Louisiana	92	54	11,074	8	30	0	13	20	37	22	634,795	175
Northern	49	31	6,910	6	12	0	12	18	18	1	223,508	79
Southern	43	23	4,164	2	18	0	1	2	19	21	411,287	96
Arkansas	18	14	1,359	0	4	0	2	13	3	0	75,335	23
Mississippi	15	12	2,841	0	3	0	0	0	11	4	118,373	47
Ala., Ga., Florida	3	0	0	0	3	0	0	2	1	0	17,250	15
Montana	19	14	860	3	2	2	10	7	0	0	40,809	68
Wyoming	7	4	817	1	2	1	0	5	1	0	28,781	59
Colorado	14	12	4,572	1	1	0	1	2	11	0	84,311	53
New Mexico	23	13	4,175	3	7	3	3	9	8	0	80,418	88
California	170	129	34,577	9	32	0	43	78	44	5	717,870	172
Utah	0	0	0	0	0	0	0	0	0	0	0	4
Total April	2,184	1,236	224,661	188	760	102	898	814	322	48	7,240,993	3,619
Total March	2,398	1,333	270,201	244	821	116	852	930	431	69	8,315,415	3,279

Service wells, four weeks ending April 27, 1946, included: *63, †135, ‡2, §8, ¶9.

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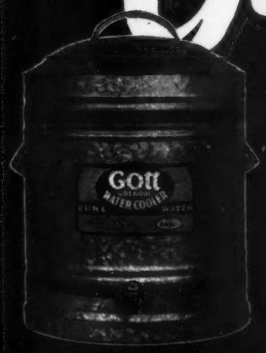

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Among the

Drilling Contractors

N. R. Dodd Drilling Co. was awarded the contract to drill the Ford Oil Co. 4 Minnie Tolles Estate in SW SE NW 10-1s-16w, Van Buren County, Michigan.

Clyde B. Hall Drilling Co. has been contracted to drill the George F. Carroll 1 Wm. C. and Barbara Quigley in SE SW 5-2n-5w, Daviess County, Indiana.

Ash Drilling Co. is running up rigging at the Ashland 2 Woody Estate in SW SW NW 31-6n-7e, Effingham County, Illinois.

Ford Henry Drilling Co. has been contracted to drill the 1 Fred Riemer in SE SE SE 21-1s-16w, for the Ford Oil Co. in Van Buren County, Michigan.

Simmons & Noble Drilling Co. has spudded the Midstates Oil Co. 1 Wentworth-Washington in 26-9n-10e, Lake St. John field, Tensas Parish, Louisiana.

C. Deely Drilling Co., Dallas, Tex., will drill the 1 Ivo Perigo for Eugene A. Riggs and William A. Dice in NW NE 4-18n-8w, Fountain County, Indiana.

Strom Oil Co. will drill a wildcat for Byron MacCallum in Kent County, Michigan. The well is the 1 Arnold Stream in NE NE NW 20-10n-12w.

Herndon Drilling Co. drilled the Holl & Branine 3 Warner A in W/2 SW NW 15-20-10w, Raymond pool, Rice County, Kansas.

Paton Brothers Drilling Co. has been contracted to drill the G. W. Chancellor 1 State in NW SE 27-17s-33e, 2 miles east of the Maljamar field and 3 miles west of the Vacuum pool, Lea County, New Mexico.

Ruhlin Overleese Drilling Co. will drill the Henry Luken 1 fee in NW SE 5-9n-10e, Decatur County, Indiana.

Thumb Drilling Co. has the contract to drill the Hugh H. Heinig 1 Arlie Wint in SW SW SE 12-9n-8e, Genesee County, Michigan.

Iron Drilling Co. is drilling below 2,000 ft. at the Darby & Bothwell, Inc. 1 Ficken in NE NE SE 33-17-17w. The test is a wildcat in Rush County, Kansas.

R. M. Perry Drilling Co. will drill the Socony-Vacuum Oil Co., Inc. 1 V. Borgart in NW SE SE 26-3n-14w, Allegan County, Michigan.

Basin Drilling Co. is testing at 1,785-1,820 ft. at the Ashland 9 Eblin Heirs in 1-N-23, Henderson County, Kentucky.

H. H. Blair Drilling Co. has completed the W. M. Peck 1 Peck in SW SW SW 6-15s-13w, Russell County, Kansas.

Union Drilling Co., Calgary, Canada, has resumed the work of cleaning out Westflank 2, LSD 8, 32-18-

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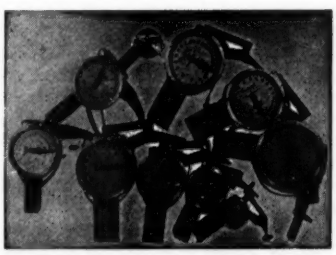

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2w5, in South Turner Valley, where casing collapsed following an experimental 5,000-qt. shot several months ago.

Claude R. Wentworth, contractor in Tulsa, has purchased a surplus Navy advanced-type trainer, Navy SN J-4, Army AT-6, for personal flying and business trips.

Bob King Drilling Co. may have set a record in the Deep River field, Arenac County, Michigan, by drilling the Holloway & White 3 Jankowski in 18 days cable-tool drilling time to the casing point at 2,746 ft. in the Dundee.

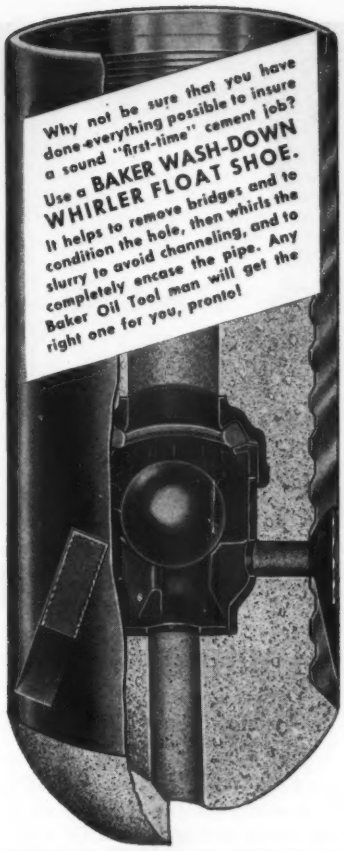
I. W. Murfin Drilling Co. was the contractor at the Beech Aircraft Corp. 2 Hinkle in SE NE NE 1-27s-1e, successful wildcat in Sedgwick County, Kansas.

Olsen-Blount Drilling Corp. is drilling below 800 ft. at the R. Olsen Oil Co. 2 Boyd in SW/4 SE/4 NE/4 23-22s-37e, Penrose-Skelly field, Lea County, New Mexico.

B. & B. Drilling Co. is the contractor at the Cities Service Oil Co. 1 Wallace in NW NW SW 18-3n-1w, East Antioch field, Garvin County, Oklahoma.

LEGAL

U. S. DEPARTMENT OF THE INTERIOR, General Land Office, Washington 25, D. C. Notice is hereby given that sealed bids will be received until noon on Wednesday, June 5, 1946, for land described herein situated within the known geologic structure of the Big Polecat oil and gas field, Wyoming. This land is offered to qualified bidders of the highest cash amounts per acre as a bonus for the privilege of leasing the land under section 17 of the leasing act as amended by the Act of August 21, 1935 (49 Stat. 674, 30 U. S. C. sec. 226), in the following parcels: All in T. 57 N., R. 98 W., 6th P.M.: Parcel No. 1, sec. 21, NW¼NW¼, 40 acres. Parcel No. 2, sec. 21, SE¼NW¼, 40 acres. Parcel No. 3, sec. 22, SW¼NW¼, 40 acres. Parcel No. 4, sec. 34, N½NE¼NW¼, SW¼NE¼NW¼, SE½SE¼NW¼, Tract 9, 54.01 acres. Total 174.01 acres. Bids must be submitted on each parcel separately; but if two or more parcels are awarded to the same bidder, they may be included in a single lease. Each bidder must submit with the bid one-fifth of the amount bid in cash, or by certified check, made payable to the order of the Treasurer of the United States, and file the showing of qualifications to receive a lease, required under 43 CFR 192.19. The envelopes should be plainly marked, "Bid for Parcel No. . . . Big Polecat oil and gas field, Wyoming. Not to be opened before noon, June 5, 1946." No bids received after the hour fixed herein for submitting bids will be considered. The remainder of the bonus and the annual rental at the rate of $1 per acre must be paid and a $5,000 corporate surety bond must be furnished by a successful bidder prior to the issuance of a lease. The deposits of the other bidders will be returned upon acceptance of the successful bids by the Secretary of the Interior. The successful bidder will be required to agree not to discriminate against any employee or applicant for employment because of race, creed, color, or national origin, and to require an identical provision to be included in all subcontracts. Bidders are warned against violation of section 59, U. S. Criminal Code, approved March 4, 1909, prohibiting unlawful combination or intimidation of bidders. The right is reserved to reject any and all bids in the discretion of the Secretary of the Interior. Fred W. Johnson, Commissioner.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PERSONALS

Osborn Is Elected Continental Oil Vice President

THE election of Harold G. Osborn as vice president in charge of manufacturing of Continental Oil Co. was announced last week. Early in March, Osborn was named to succeed Dr. Walter Miller, veteran Continental vice president, who retired from service with the company.

Osborn has been part of the executive staff of Continental's manufacturing department since November 1921, when he was employed in the power division of the company's Ponca City, Okla., refinery. The following year he was made office assistant to Dr. Miller, became assistant manager of the manufacturing department in 1927, and manager in 1935.

Born in Watertown, N. Y., he received his public school education in Kalamazoo, Mich., and was attending Kalamazoo College when he left to join the Army Air Forces at the outbreak of the First World War. He was commissioned in 1918 and served overseas. Following his discharge, he was a plantation manager in Louisiana until he joined Continental.

Gen. Pierre Blanchard, president of Groupement d'Achat des Carburants (G.A.C.), Paris, is now in New York City on a 3-week business trip. G.A.C. is the French petroleum agency.

Capt. Harry P. Stolz who has been in charge of the Navy's operations at Elk Hills, Calif., will soon be relieved. He will be succeeded by **Capt. V. H. Wilhelm** who has been inspector of the Naval Petroleum Reserve since 1941. **Max C. Eastman** will function as the Navy's field man at Elk Hills and will represent Capt. Wilhelm in the field.

Ruben E. Oxford was recently promoted from assistant engineer to district engineer of the United Gas Corp. and transferred from the Shreveport engineering department to the Southwest Louisiana district. **Johann R. Berry** is now district engineer in the Dallas office. He was formerly assistant district engineer at Monroe, La.

Jack Levering, land man for Stanolind Oil & Gas Co., has resigned to become an independent operator at Abilene, Tex. Associated with him will be **T. J. Johnson,** geologist, and **G. L. House,** both recently released after military service, and **Raymond Hedge,** Tyler.

Stanley C. Herold, petroleum geologist and production engineer, recently resumed his consulting practice and will specialize in reservoir geology and engineering with offices in Glendale, Calif. During the war, he was on the staff of the War Production Board at Los Angeles. From 1913 to 1923, Herold conducted exploratory work in South America, and in 1933, visited oil installations in Russia and Germany.

T. H. Sloan of Socony-Vacuum Oil Co., Inc., was scheduled to arrive in Houston this week from Colombia for his vacation.

Bruce H. Robinson and **Richard R. Shinn,** both General Petroleum Corp. production men and closely associated with California oil development for many years, have been advanced to new positions. Robinson has been with the corporation since 1925 when he joined the field staff as timekeeper. From clerical assignments he worked into the production end of the business and by 1930 was assistant production engineer. His new position is assistant manager of the department. Shinn, first employed by the company as a foreman in the Taft field in 1913, has become general superintendent.

Dr. John W. Butler, Jr., has resigned as geologist for The Texas Co. in Colombia and will become chief geologist for Phillips Venezuelan Oil Co. Dr. Butler went to Bogota, Colombia, in 1938, as geologist for the Colombian Government and 2 years later joined the staff of The Texas Co.

E. Marshall Harvey has been appointed division operating manager of the Philadelphia division of Socony-Vacuum Oil Co., Inc., succeeding **C. A. Rumpff,** who has been transferred to the company's offices in New York. Harvey began with Socony-Vacuum as an engineering draftsman and became district engineer and then division engineer. In 1942 he was made field operating assistant in the Philadelphia area.

W. L. Connelly, president of the Sinclair Prairie Oil Co., Tulsa, has returned to United States from a 3-week tour of Venezuela and Colombia. He accompanied **Henry S. Phillips,** president of Consolidated Oil Corp., and **Hugh Russell,** assistant to Phillips, on an inspection tour of Consolidated's subsidiaries in those countries. Connelly had not visited South America during the last 15 years and said he was impressed with the extensive operations which American companies have developed during that time.

W. W. Stiles and **Harold C. Duncan,** formerly in California with The Texas Co., have been sent to join the company's operations in Colombia. Six others, **A. D. Hollis, L. R. Clayton, W. V. Griggs, T. M. Webb, R. S. Cook,** and **W. C. Lance** were recently cleared by the company from California to Venezuela.

E. W. Bowness, formerly vice president and managing director of Canadian Western Natural Gas, Light, Heat & Power Co. and Canadian Utilities, Ltd., both of Calgary, and Northwestern Utilities, Ltd., of Edmonton, has been appointed chairman of the board of all three companies.

J. D. McCullough, assistant superintendent of the telegraph department

of Northern Pipe Line Co. at Lima, Ohio, has been named to succeed **Wilson H. Flann,** superintendent of the company's telegraph department, who is retiring after 52 years of company service.

F. G. Stewart, president of Stewart Oil Co., has returned to his Mount Pleasant, Mich., office following his release from the Army as a lieutenant colonel.

Phil Reed, district manager for Richmond Exploration Co. of Colombia, was to arrive in New York this week for his vacation.

James P. Murphy has been appointed associated director of the new division of exploration and production research of Shell Oil Co., Inc. The new division, in which will be centered all research on exploration and production, will be quartered in a new building now under construction in Houston. Murphy joined Shell at Los Angeles in 1937 and in 1940 was made production engineer for the coastal division at Ventura, Calif. In 1941 he became senior production engineer for activities west of the Rockies, holding this position until he entered the Navy in 1942. He was released as a commander last October.

Joel C. Ott, district superintendent of the production department of Humble Oil & Refining Co., has been transferred from Maringouin, La., to the Roanoke, La., office, replacing **D. W. Wofford** who retired after holding that office for 25 years. News of other Humble personnel: **Floyd L. Lively,** to district superintendent of the Bayou des Glaise district; **J. E. Ozburn,** to office civil engineer, Tyler, Tex.; **Jack S. Toler,** district civil engineer, to the London district at Overton, La. **Ex-Major James H. McReynolds, Jr.** returned to the petroleum engineering division, Houston, Tex., after 4 years in the service as an ordnance officer.

Harry Campbell has been appointed manager of the marine department of Sinclair Refining Co.; and will be elected a vice president at the next meeting of the board of directors. Campbell was graduated from the Naval Academy at Annapolis, Md., in 1907. He has been with the Sinclair company for 23 years. In his present position he succeeds **Capt. J. G. Johnson,** who has retired.

L. Max Lyon has rejoined Carter Oil Co. as senior petroleum engineer in the St. Elmo, Ill., office after more than 4 years of Army service. Lyon, an antiaircraft artillery major, served in the Pacific. Other veterans back with Carter include **William J. Plumley,** junior geologist at Billings, Mont., **Joseph C. Johnson,** geophysicist in the exploration department; **Ralph D. Lynn,** junior geophysicist at the Tulsa laboratory; **Weldon C. Butler,** junior petroleum engineer at Carmi, Ill.; and **Clifford L. Willis,** junior geologist at Wichita, Kans.

C. W. Strance, Dallas, has resigned as chief supervisor of the Oil and Gas Division, Texas Railroad Commission, and will enter the oil business in Corsicana, Tex.

John L. Thompson, formerly chief chemist for Lone Star Producing Co. at Ranger, Tex., has been transferred to the company's home office in Dallas and promoted to chief chemist. He will be in charge of plans and design for the company's two gasoline plants at Carthage and Chapel Hill.

Charles A. Dillard is superintendent of a new production district of Carter Oil formed in the southern division by consolidating the Rodessa and Magnolia districts with headquarters now at Magnolia, La.

Charles U. Bay, New York, president of Bay Petroleum Corp. of Denver, last week was nominated by President Truman to be ambassador to Norway. Bay founded Bay Petroleum in 1935. The company operates refineries at Denver, McPherson, Kans., and New Orleans. Bay also is well known in eastern financial circles.

M. Herring, drilling supervisor for Socony-Vacuum Oil Co., Inc., and **T. J. Downey,** tool pusher for Socony-Vacuum, are scheduled to arrive in New York June 3 from Colombia. Downey will go to Los Angeles where he will spend his vacation.

Charles E. Williams, on terminal leave as an Army captain, has returned to Lone Star Producing Co. as production engineer in the Eastland, Tex., office. **Samuel D. Liles,** who returned from Navy service earlier this year, is back with Lone Star as production engineer at Athens, Tex.

E. M. Dutton, acting director of the Arkansas Oil and Gas Commission, has resigned and will make his home in Brownwood, Tex. He was commended for outstanding service by **O. C. Bailey,** chairman, who has not yet announced his successor.

C. N. Hunt, formerly district engineer with Humble Oil & Refining Co. at Overton, Tex., has been transferred to Carthage as farm boss in that district. He was succeeded in Overton by **John G. Calvert,** who was transferred from the division office in Tyler, Tex.

Delbert F. Smith, Oklahoma Seismograph Corp., has been elected president of the Shawnee, Okla., Geological Society. Other officers are **Henry A. Campo,** Atlantic Refining Co., vice president, and **Miss Marcelle Mousley,** Atlantic Refining Co., reelected secretary-treasurer.

Kenneth W. Lewis, since 1940 a member of the geological department of W. C. McBride, Inc., has been named to succeed **K. A. Simmons** who has resigned as McBride's division exploration manager in charge of operations in the Illinois-Indiana-Kentucky basin area. Lewis will maintain the division headquarters at Evansville, Ind. Simmons, with McBride for nearly 16 years, will undertake private oil operations.

E. M. Winslow, who returned recently from the Navy, will succeed **William F. Taylor** as office manager of Sun Oil Co. at Columbus, Ohio. Taylor has been given an extended leave of absence due to illness.

Robert E. Boothe, recently released after 4 years' Army service, has resumed his duties with the Federal Petroleum Board at Midland, Tex.

Robert P. Russell, president of Standard Oil Development Co., received the Medal for Merit from Maj. Gen. Alden H. Waitt, chief of the Army's Chemical Warfare Service, in ceremonies held recently in New York. During the war, Russell was chief of Division 11, National Defense Research Committee, and consultant and adviser to the Chemical Warfare Service. The citation from President Truman praised Russell for his work in developing such chemical warfare equipment as incendiary bombs and smoke generators

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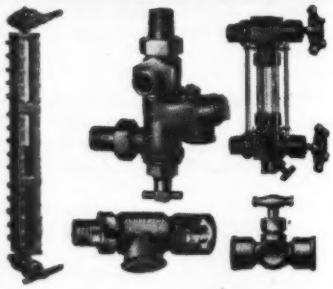

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- Bridge Timbers
- Wood Tanks

FOR THE REFINER
- Redwood Cooling Towers
- Construction Lumber
- Redwood and Cypress Tanks
- Redwood and Cypress Vats

FOR THE GEOPHYSICAL SUPPLY HOUSE
- Loading Poles
- Sucker Rods
- Hardwood Cabinets
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Hardwood Lumber
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Equipment Men in the News

McDermond to South America For Tube Turns

C. C. McDermond has been appointed representative of the welding fittings division of Tube Turns, Inc., in Venezuela and

C. C. McDERMOND

C. T. McCOY

Colombia, it is announced by Jack Green, the firm's sales manager. McDermond and his assistant, C. T. McCoy, make their headquarters in Apartado 331, Maracaibo, Venezuela.

Perelle Elected President Of Gar Wood Industries

C. W. PERELLE

Charles W. Perelle, formerly vice president in charge of manufacturing of Consolidated - Vultee Aircraft Corp., has been elected president of Gar Wood Industries, Inc., it is announced by John J. Bergen, chairman of the board. He succeeds Glen A. Bassett, retired.

Firm's President Returns

Barnes Manufacturing Co. announces the return to active duty of its president, Millard H. Pryor, who has been on leave, serving as a commander in the United States Naval Reserve.

Miers Elected to National Office of Nomads

SHEP MIERS

Shep Miers, Southwest Supply Co., Tulsa, has been elected secretary - treasurer of the Nomads' National Board of Regents. He succeeds W. J. Campbell, of New York City. The Nomads' national secretarial office is being moved to 1906 Philtower Building, Tulsa.

Swartz Gets New Post With Tube Company

J. D. Swartz, district representative for South Chester Tube Co. in Tulsa, has been promoted to be manager of sales, Mid-Continent district, including the states of Oklahoma, Kansas, and Illinois. He will continue to make his headquarters in Tulsa with branch office in Wichita. He will also be manager of sales of South Chester Corp., a recently organized subsidiary, handling specialty products somewhat out of the normal range of the Tube company business.

Induction Processing Facilities Offered by New Tulsa Firm

The Induction Processing Co., a Tulsa organization, has a new plant at 3415 Sand Springs Road. The plant's equipment includes a Lepel 30-kw. high-frequency induction heater. In the near future, the company, in addition to the heat treating of steel, will be making precision steel castings by the centrifugal casting technique.

Nichols Heads Taylor Instruments Research Division

The Taylor Instrument Companies announce the appointment of N. B. Nichols as director of its research division. He succeeds Dr. H. L. Mason who resigned to accept the professorship of mechanical engineering at Iowa State College. Nichols has, for the past 4 years, been associated with the Radiation Laboratory, Cambridge, Mass., a subsidiary of Massachusetts Institute of Technology, where he was in charge of a group that pioneered in developing numerous mechanisms required in automatic gunfire control.

Thomas Leaves for South America

James A. Thomas, New York City, export manager for Parkersburg Rig & Reel Co., left New York May 12 for a trip to South America where he will visit the fields of Venezuela and Colombia. He expects to return June 15.

Dodge Air Products Board Chairman

Henry W. Dodge, former vice president and general sales manager of The Texas Co., has been elected chairman of the board of Air Products, Inc., with New York offices at 50 Broadway.

Thermoid Appoints Research Director

Thermoid Co., Trenton, N. J., announces the appointment of H. C. Anderson as director of research. Anderson, a chemical engineering graduate of Iowa State College, was formerly with The Flintkote Co., Chrysler Corp., and Ford Motor Co., in research, engineering, and managerial capacities.

National Supply Buys Waynesburg Tool Co.

National Supply Co. has announced purchase of Waynesburg Tool Co., at Waynesburg, Pa. The company took over on May 1 with Edward L. Hollobough as store manager. The store was originally owned by Prichard Supply Co., and more lately was operated by Donnelly & Wilson.

National Supply Co. also announces the opening of a new store at Albany, Ky. J. Gordon Martin, formerly connected with the Winchester, Ky., store, is the local store manager.

Gude Named Vice President Of Wyatt Works

G. E. Gude, Jr., for the past 10 years manager of sales for Wyatt Metal & Boiler Works, with headquarters at Houston, has been elected to the board of directors and made vice president of the company. He will continue his position as manager of sales. Wyatt operates large steel fabricating plants at Houston and Dallas.

Sterling Engine Moves New York Office

The New York office of Sterling Engine Co., formerly located at 900 Chrysler Building, has been moved to 401 Fourth Avenue, New York. In its new quarters the company will have a large showroom facing Fourth Avenue wherein will be exhibited marine and industrial engines.

Pitts Named Baash-Ross Field Representative

William A. Pitts, formerly of Los Angeles, Calif., has been named field representative in the Mid-Continent territory by Baash-Ross Tool Co. Pitts was formerly associated with Chain Belt Co., Regan Forge & Engineering Co., and Axelson Mfg. Co. Pitts' district headquarters will be in Oklahoma City and will include Oklahoma, West Texas, Kansas, and Illinois.

Swan Joins Krausse

W. A. Swan has joined the staff of Krausse Manufacturing Co. as manager of development and sales. Swan was formerly senior petroleum engineer for Humble Oil & Refining Co. with whom he served 13 years.

His duties with Krausse include the management of design, development, and distribution of a complete new line of oilfield equipment which the company will soon announce.

Wilson Joins International Nickel

R. M. Wilson, Jr., has joined the technical service section of the development and research division of International Nickel Co., Inc., at New York, as a welding engineer. He was formerly welding engineer at the Bloomfield, N. J., works of General Electric Co.

Michell Joins Spicer

Announcement of the addition to its engineering staff of William P. Michell, until recently executive engineer and assistant chief engineer of Mack Trucks, Inc., Allentown, Pa., is made by Spicer Manufacturing Corp. Michell will have the title of technical assistant to the vice president.

Rheem Establishes London Office

Rheem Manufacturing Co., makers of steel shipping containers, and basic household appliances, are establishing London offices in conjunction with the extension of

operations within the British Empire, according to W. E. Zander, vice president in charge of the company's foreign activities. Lanning Roper, recently returned from service with the U. S. Navy, will be in charge of the London office.

Hilliard Joins Cardwell As Sales Representative

CECIL HILLIARD

Cecil Hilliard has been appointed sales representative for Cardwell Manufacturing Co., Inc., according to Robert M. Smith of Wichita, sales manager. For the last 9 years Hilliard has been sales representative for the Texas and Louisiana Gulf Coast for Republic Supply Co. His sales territory will include the Houston, Dallas, San Antonio, Corpus Christi, and the Rio Grande Valley areas.

Jackson Marquette Representative

W. V. C. Jackson, Tulsa, has been appointed sales representative for Marquette Coppersmithing Co., Philadelphia. The line includes expansion joints, column stills, dephlegmators, condensers and coolers, preheaters and heat exchangers, tanks, vats, kettles, autoclaves, jacketed kettles, and evaporators.

Myers Returns to Davey Compressor Co.

Appointment of J. T. Myers as assistant general manager of the Davey Compressor Co., Kent, Ohio, is announced by S. V. Saginor, general manager. Myers has just been released from the Navy. He first joined the Davey company in 1941.

Abbott Joins Oil Well

Ed Abbott, Jr., recently discharged from the U. S. Navy after nearly 4 years' war service, is now San Joaquin Valley representative for Oil Well Manufacturing Corp.

ED ABBOTT, JR.

GLEN M. SIMS

with offices at the Bakersfield, Calif., branch. Prior to the war Abbott was with Hughes Tool Co. He will represent the line of "Red Devil" mud pump specialties in all the northern California territory. Oil Well Manufacturing Corp. is represented in the Los Angeles Basin and California coastal fields by Glen M. Sims, veteran of many years in the oil-tool business, formerly located at Bakersfield.

Tube Turns Appoints Two

S. M. (Skid) Spears, Jr., has been promoted to assistant district manager of the New York office of Tube Turns, Inc., Louisville, it is announced by Jack Green, manager of the firm's welding fittings division.

James H. Withers has been appointed district manager in charge of the firm's San Francisco and Los Angeles offices.

Ritterbusch Joins S. M. Jones Field Engineering Staff

RITTERBUSCH

Walter H. "Tex" Ritterbusch, Jr., recently discharged from the Air Corps after 3 years' service as an aircraft engineering officer, has joined The S. M. Jones Co., according to an announcement by L. J. Pundt, sales manager. He is the latest member of the field engineering staff organized by Jones to analyze wells, record suckerrod service, and confer and cooperate with production engineers to improve pumping conditions.

American Car & Foundry Names Three

J. W. Sheffer has been appointed general improvement engineer for American Car & Foundry Co. He is in direct charge of the improvement division with headquarters in New York. He has been with the company since 1908. E. A. Watson is assistant general improvement engineer and H. F. Schwarting is general electrical engineer, with headquarters at St. Louis.

Abel Rejoins Cooper-Bessemer

ARTHUR ABEL

Appointment of Arthur Abel as sales engineer on the staff of its Odessa, Tex., branch is announced by Stanley E. Johnson, director of sales of The Cooper-Bessemer Corp., Mount Vernon, Ohio. Abel was connected with Cooper-Bessemer's Los Angeles office several years. H. E. Scraggs is branch manager of the Odessa office, in charge of Southwest Texas sales operations.

New Firm Name

The name of Ward Chemicals, Inc., Tulsa, has been changed to ATCO, Inc. The company will operate under the direction of H. G. Kopp, president, and William F. Ward, secretary-treasurer.

Ray Poole Takes Foreign Trip for Security

Ray Poole has been appointed manager of the foreign service department for Security Engineering Co., Inc., and is now on an extended trip to Mexico and South America in which he will cover all of the major oil fields of the northern part of the continent.

Bailey Joins Girdler's Votator Division

Alton Edward Bailey has joined the technical staff of the Votator division of the Girdler Corp., Louisville, Ky. He heads one of the division's research and engineering groups, specializing in the development and improvement of processes and products in the edible fats and oil field.

H. S. Brown New Board Chairman of Foster Wheeler

Directors of Foster Wheeler Corp. have elected H. S. Brown as chairman of the board to succeed his brother, the late J. J. Brown. Brown will continue as president of the corporation in addition to his new post. David McCulloch, executive vice president, was named chairman of the executive committee to succeed H. S. Brown. All other officers were reelected.

Maple Exhibits Manager for John A. Roebling's Sons Co.

Appointment of Fred J. Maple as manager of exhibits is announced by E. C. Low, vice president in charge of sales, John A. Roebling's Sons Co., Trenton. Maple, formerly manager of advertising, is a member of the board of directors, Exhibitors Advisory Council, Inc. Appointment of Albert Neroni to succeed Maple as manager of advertising is also announced.

Heintz New Vice President, Elastic Stop Nut Corp.

C. E. HEINTZ

Charles E. Heintz, who has been general sales manager of Elastic Stop Nut Corp. of America, Union, N. J., for the past 2 years, has been elected vice president in charge of sales, it is announced by John R. Munn, president. Heintz is a graduate of Stevens Institute of Technology and the graduate school of engineering at Harvard University, and has spent many years in the sales engineering field.

Scott New Sales Head for L.P.G.

T. V. Scott has been appointed sales manager of the liquefied petroleum products division of the Weatherhead Co., Cleveland, covering the petroleum and liquefied petroleum gas equipment industries.

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